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In 1966, the President established the National Advisory Commission on Health Manpower to "develop appropriate recommendations for action by government or by private institutions, organizations, or individuals for improving the availability and utilization of health manpower." Recommendations include: (1) federal funds to encourage enrollment expansion by medical and dental schools, (2) appropriate utilization of nursing skills and improved salaries and personnel policies for nurses, (3) university supervision of formal education for all health professions, (4) continuous revision of curriculums for health professionals on the basis of a continuing functional analysis of health care, (5) high priority to federal support of experimental programs for training and utilizing new categories of health professionals, (6) high priority to health care of the disadvantaged, (7) implementation of a major program in the area of accident prevention and emergency care, (8) stress by the federal government and health insurance organizations to introduce payment formulas which would reward efficiency and quality of hospital care, and (9) financial support for experimental projects of integrated health service systems. VT 007 895 is a related document. (JK)

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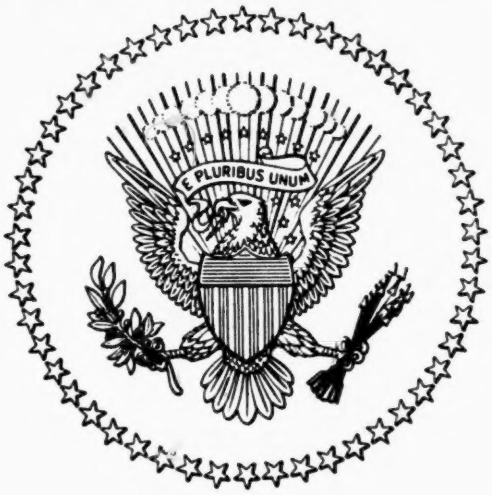
REPORT

OF THE

NATIONAL ADVISORY COMMISSION ON HEALTH MANPOWER



VOLUME I

NOVEMBER 1967

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

REPORT

OF THE

NATIONAL ADVISORY COMMISSION ON HEALTH MANPOWER

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VOLUME I

NOVEMBER 1967

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Once the study was underway, we depended heavily on criticism and advice from individuals inside as well as outside the government. Again, we can only thank them anonymously and hope that the report will justify the large amount of time they spent helping us.

We must, however, directly salute the members of our seven panels, whose reports are the foundation of the Commission study. These men and their staff members took time from their heavy schedules to make field trips, to collect and analyze data, and to write extensive, original reports (which are reprinted in Volume II). The listing of their names on the following pages is an inadequate recognition of their great contribution.

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I. Introduction

In the summer of 1966, health care costs were rising at twice the rate of overall prices; informed predictions suggested that the health industry would become the nation's largest employer by 1975; the national health bill aproached fifty billion dollars; and there was widespread discontent with the unavailability of professional health services, despite greater numbers of health workers and more medical facilities than ever before. Against this background, the nation faced the task of implementing Medicare and Medicaid, the most significant health care legislation in U.S. history. To assist him in responding to these challenges, the President established the National Advisory Commission on Health Manpower to "develop appropriate recommendations for action by government or by private institutions, organizations, or individuals for improving the availability and utilization of health manpower."

Very early in the Commission work, it became clear that our study of health manpower must be concerned with more than total numbers of personnel. Although adequate numbers are important, they are only one of the requirements for providing acceptable health care to all segments of our population. The adequacy of health services depends as much upon the organization of health personnel and their combination with other resources as it does upon their numbers alone.

We also came face to face with a paradox. On one hand, the numbers of physicians, hospital beds, and health services per person are generally equal to or greater than they were 30 years ago; research has vastly expanded medical knowledge; and the growth of private and public health insurance programs, along with Government support for the needy, have greatly reduced financial barriers to care. On the other hand, despite this apparently improved situation, there is widespread and serious talk of a "health crisis" in the country, a crisis which is believed to be upon us now or just around the corner. The indicators of such a crisis are evident to us as Commission members and private citizens: long delays to see a physician for routine care; lengthy periods spent in the well-named "waiting room," and then hurried and sometimes impersonal attention in a limited appointment time; difficulty in obtaining care on nights and weekends, except through hospital emergency rooms; unavailability of beds in one hospital while some beds are empty in another; reduction of hospital services because of a lack of nurses; needless duplication of certain sophisticated services in the same community; uneven distribution of care, as indicated by the health statistics of the rural poor, urban ghetto dwellers, migrant workers, and other minority groups, which occasionally resemble the health statistics of a developing country; obsolete hospitals in our major cities; costs rising sharply from levels that already prohibit care for some and create major financial burdens for many more.

There *is* a crisis in American health care. The intuition of the average citizen has foundation in fact. He senses the contradiction of increasing employment of health manpower and decreasing personal attention to patients. *The crisis, however, is not simply one of numbers.* It is true that substantially increased numbers of health manpower will be needed over time. But if additional personnel are employed in the present manner and within the present patterns and "systems" of care, they will not avert, or even perhaps alleviate, the crisis. *Unless we improve the system* through which health care is provided, care will continue to become less satisfactory, even though there are massive increases in cost and in numbers of health personnel. This report therefore deals primarily with what can and should be done now—by using present health professionals and facilities more efficiently—so that the availability and quality of health care will meet the needs of all citizens, the cost of the care will be kept within reasonable bounds, and our plans for the future will be formulated wisely.

Our attention has been directed mainly at the present system of medical care in the country. The word, "system", is a convenient one for our purposes, but we recognize that it is inaccurate if it implies the existence of an organized, coordinated, planned undertaking. The practice of medicine is very old indeed, and its present shapes display its ancient beginnings and its slow and evolutionary development. As recently as the early years of this century, medical knowledge was so limited that an individual physician could treat most illnesses for which treatment was available, and a single practitioner frequently cared for several generations of the same family. Care was usually provided in the patient's home or the doctor's office; hospitals were reserved for the mortally ill or the indigent.

Since World War II, medicine has undergone radical change. Continuous care from a single physician has become increasingly rare; almost all new practitioners are specialists and are supported by a variety of skilled personnel; medical services are fragmented by disease categories and methods of payment; the place of care is moving steadily from the home to the physician's office and, increasingly, to the hospital. Medicine has participated in the general explosion of science and technology, and possesses cures and preventives that could not have been predicted even a decade ago. But the organization of health services has not kept pace with advances in medical science or with changes in society itself. Medical care in the United States is more a collection of bits and pieces (with overlapping, duplication, great gaps, high costs, and wasted effort), than an integrated system in which needs and efforts are closely related.

Less than perfect use of resources is, of course, not unique to health. Yet in our opinion, the organization of health care has been less responsive to rapidly changing national needs than have many other aspects of society, and unless major changes are accomplished more quickly than has ever been possible in the past, a more serious "crisis" will be inevitable.

Our emphasis throughout our deliberations and in this document has been to put the needs of the patient first. Our recommendations for improving access to the medical care system, assuring high quality care, and controlling costs are all in keeping with this philosophy. Where choices have to be made between conflicting interests, some hardship is always involved. In such cases, we have chosen to put the burden on the health professional, not on the patient.

Because the present system channels manpower into inefficient and inappropriate activities, added numbers by themselves cannot be expected to bring much improvement. Furthermore, the additional numbers for which plans must be made can be soundly determined only after we reshape our system of health care. At first blush, this might sound as if we are about to propose the creation of a master Federal Plan for national health care. Not so. We are convinced that just as it is true for so many of our nation's gravest difficulties, *government alone is not big enough to solve the problems of health care for the American people*. For all its great size, the capabilities of the Federal Government, even when united with state and local governments, are small compared with the combined resources and experience of the private sector. These include the professions, voluntary agencies, religious and educational institutions, hospitals, organized labor, business and industry, and concerned citizens. Our recommendations require that the resources of each of these very powerful forces be applied to reshape effectively the health care system.

In reviewing our recommendations, we are reassured to find that we are not calling for vast additional Federal expenditures, but rather for Federal support of research and pilot projects relating to the system and its reformation. Nor are we calling for massive Federal regulation of the quality and costs of medical care. Instead, we believe that they can be controlled most effectively by a judicious combination of peer groups with governmental agencies, and by the use of incentives to encourage improvement of quality, greater efficiency, and reduction of costs. Within the limits of what is known and can be accomplished today, we see a very clear opportunity simultaneously to improve the quality, to spread the availability, to control the rise in cost, and to provide the capital needed for adequate medical-care facilities in the future.

But if our recommendations have merit and timeliness, how are they to be implemented? We hope that government, universities, the health professions, hospitals, private insurance carriers, and prepayment plans will give attention to our findings and act where it is appropriate. Voluntary acceptance of responsibility is always the most effective, and this is what we recommend. But time is short. Unless action is taken soon, health problems—like the problems of our neglected urban centers—may no longer be controlled. A boulder teetering at the top of a cliff can be steadied with a few strategically placed stones, but once rolling it cannot be stopped until it has run its damaging course.

The leadership of the Federal Government should make clear to each segment of society the nature and urgency of the problem, and assist each group in responding to the particular need which it is best fitted to serve. Such an undertaking, if accomplished successfully, will involve a creative partnership of public and private enterprises, and might even become a useful model for progress in other fields.

One overall caution: our conclusions and recommendations are necessarily qualified because of our inability to obtain truly adequate data on the medical care system from existing sources. While the "information explosion" has developed out of the expanded use of computers and automated procedures, the health industry, in government as well as out, has been too little affected by these innovations. As a result, there is a serious lack of the consistent and comprehensive statistical information that is required for rational analysis and planning, despite a surfeit of numbers about health. In our recommendations, therefore, we have tried not to go beyond what seems reasonably supported by the available figures, confirmed by our own collective judgment. A more detailed and specific report would have resulted from better information.

Any recommendations for change will have some disadvantages. Ours are no exception, but this should not disqualify them from consideration. Antagonists of change point to anticipated drawbacks while ignoring faults in the present way of doing things. But proposed changes should be evaluated against the old system that they are designed to correct, not against some nonexistent ideal. We hope that our general recommendations and suggestions will be a useful contribution and, by provoking constructive inquiry and discussion, will result in solid improvements in health care.

II. Health Manpower and Health Services in the Future

Present trends indicate that in the coming decade the growth of health services[1] will far outpace the growth of population. At the same time, the "physician shortage" will in all probability continue to worsen. These seemingly contradictory predictions epitomize the paradoxical trends evident in the health services sector. To understand them it is necessary to look beyond the volume of services and to examine the nature and distribution of available care.

Such an examination reveals that, despite remarkable growth in the scope and quantity of services provided, critical shortages continue to exist in a variety of forms. There is inadequate health care for the disadvantaged.[2] There are shortages of entry points for the patient into the medical care system, and of personal contact with a physician who usually provides this entry. Once in the system, the patient may fail to receive the personal, considerate attention which is so important to the sick and frightened.

In part, these shortages are directly related to inadequate supplies of skilled health personnel. But they are also related to the way in which health personnel are organized (or unorganized) to provide medical care. As indicated in later parts of this section, we believe that measures to increase the supply of health manpower are necessary; but we believe that changes in the health care system are equally essential and that, until such changes are made, it will not be possible to meet demands for care or to estimate the need for additional manpower in the future.

A. Trends in the Supply of Health Services

Most reports on health manpower have estimated the adequacy of future health care on the basis of predicted ratios of physicians and dentists to population.[3] The shortcomings of this approach are apparent when past increases in the provision of health services are compared with increases in these two professions. While the numbers of physicians and dentists have grown at approximately the same rate as population in recent decades, the volume of medical and dental services has increased far more rapidly as a result of the growing contribution of other health personnel, hospital services, medical and dental laboratories, and the industrial and technological components of society.

---

[1] Care by health professionals and ancillary personnel, diagnostic and therapeutic laboratory procedures, hospital care, etc.

[2] Disadvantaged for any reason, including poverty, race, geographic isolation, age, etc.

Physicians and dentists remain the indispensable central providers of health care but, as Figures 1–3 show, they are being assisted by rapidly increasing numbers of complementary personnel.[4] From 1955 to 1965, while the population increased 17 percent and the number of active physicians increased 22 percent, professional nurses in practice increased 44 percent, registered X-ray technologists increased 56 percent, and clinical laboratory personnel increased 70 percent. In the same period, dentists increased 13 percent, but the number of dental assistants rose by 32 percent and dental hygienists by 54 percent.

The growing assistance provided to physicians and dentists has had a major impact on the supply of health services, as shown in Figures 4 and 5.[5] While physicians in private practice increased 12 percent between 1955 and 1965, "physician-directed" services [6] rose by 81 percent. This increase in services has resulted from more use of staff assistance, more laboratory procedures, and the upgrading of physicians' personal services because of increased specialization. Thus, the increase has resulted primarily from more services provided to the patient per visit to the physician rather than increases in the number of visits. During this same period, other health services also increased rapidly—hospital services by 65 percent, and services provided under the direction of dentists by 47 percent. Since the population increase was only 17 percent, there was a substantial per capita rise in the availability and use of health services. This recent rapid expansion of health services can be expected to continue through 1975.

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[3] See Appendix VI, Volume II, "Major Studies of Manpower Requirements for Health Services, 1930–1965."

[4] For details on health manpower trends, see also Appendix I, Tables 1 and 2.

[5] The increases shown in the figures, as well as those cited in the text, represent estimates in the rise of the "real" value of the services considered, after eliminating the influence of health care price increases. See note to Figure 4.

[6] Physician-directed services are all services billed to patients by private physicians. They include not only the personal services of physicians but those of their staffs and of laboratories that provide them with assistance.

Although there are some obvious shortcomings of the price index used to deflate dollar figures that result in the 81 percent estimate, there seems little doubt that the rise in output of physician-directed services was large relative to the increase in the number of physicians.

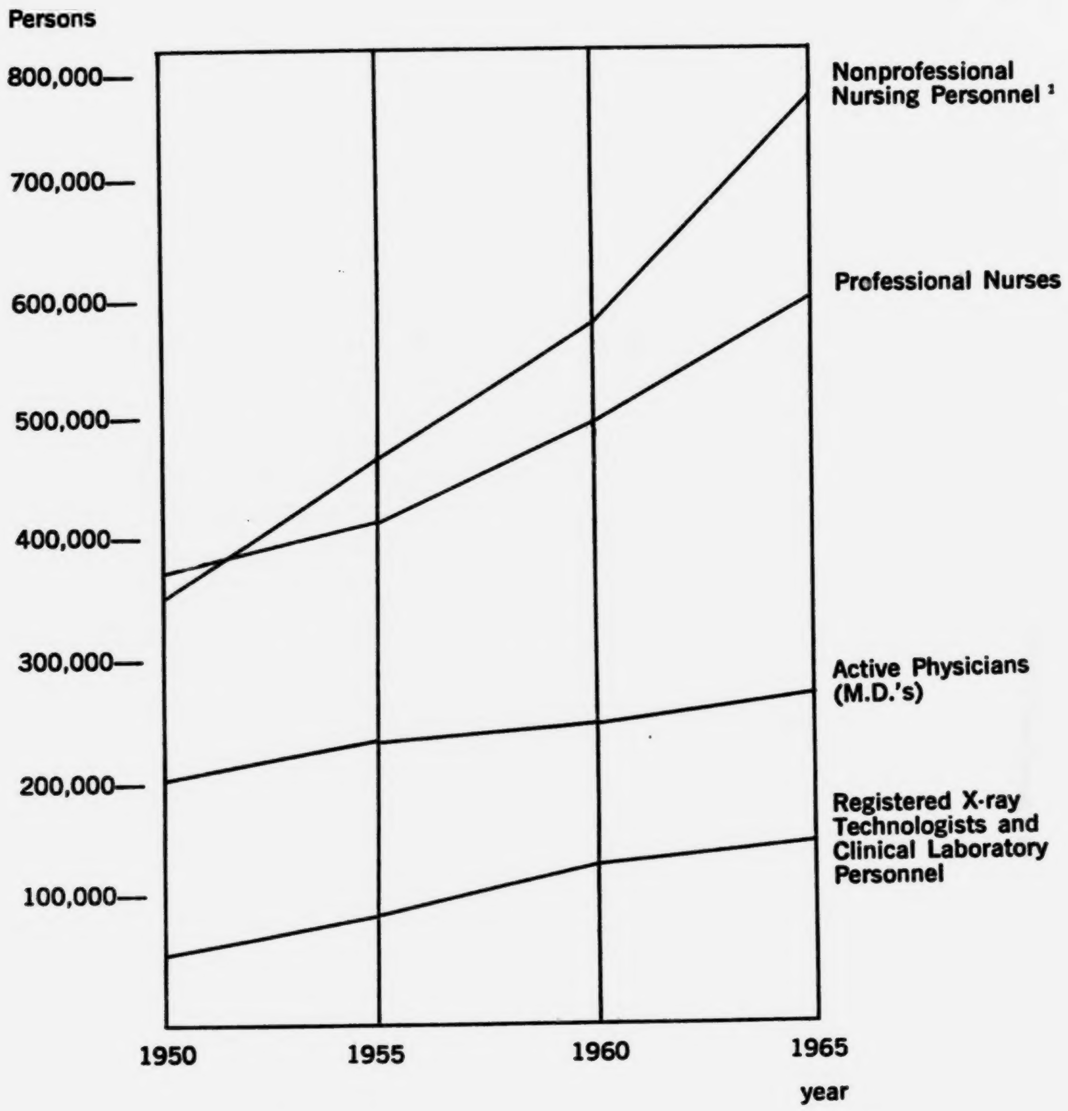

FIGURE 1.—Trends in the Supply of Medical Manpower

[1] Practical Nurses in Practice and Employed Aides, Orderlies and Attendants.

NOTE: See Appendix I, Table 1 for details and sources.

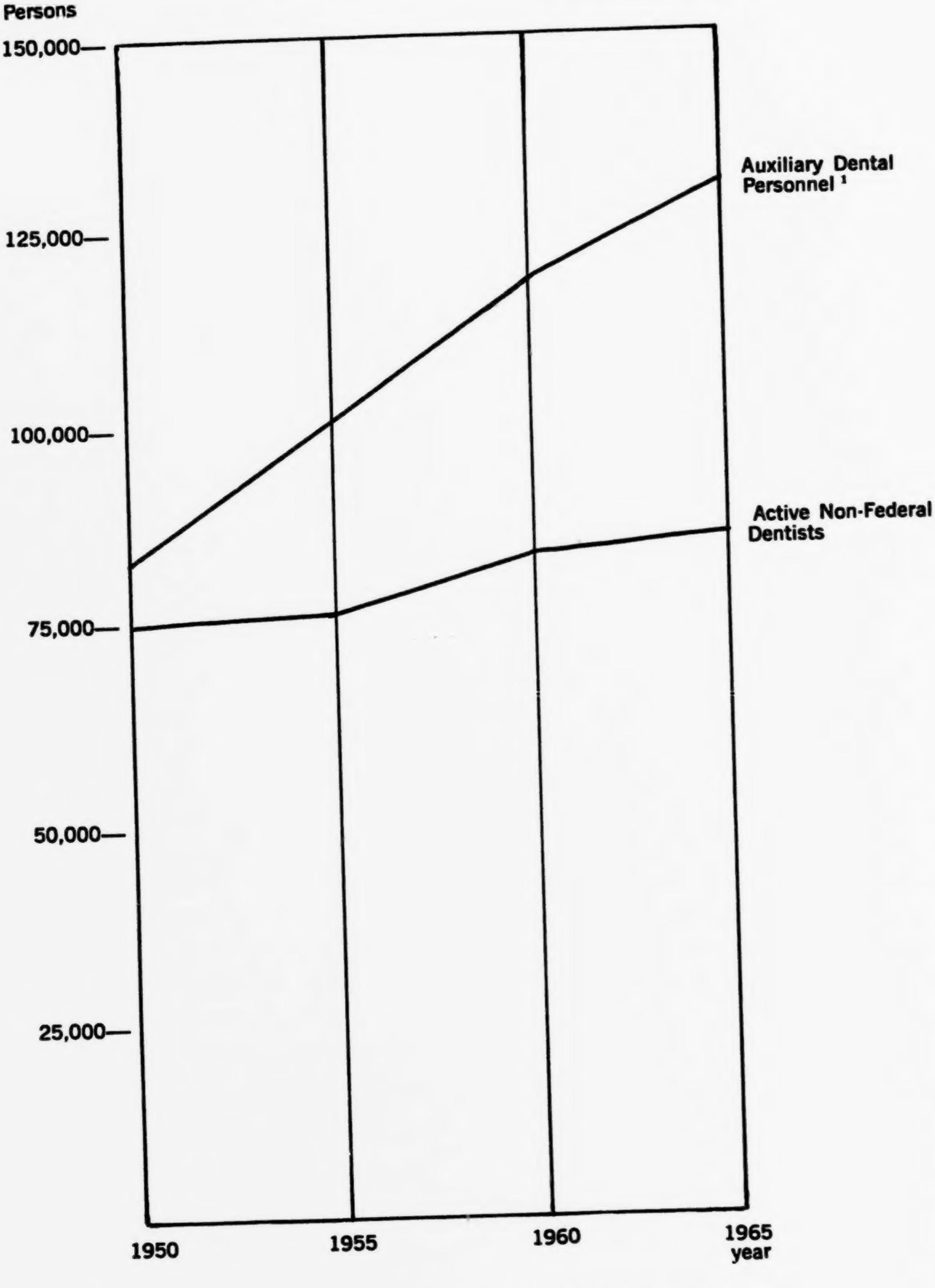

FIGURE 2.—Trends in the Supply of Dental Manpower

[1] Dental Hygienists (active), Dental Assistants (employed), and Dental Laboratory Technicians (employed).

Note: See Appendix I, Table 1 for details and sources.

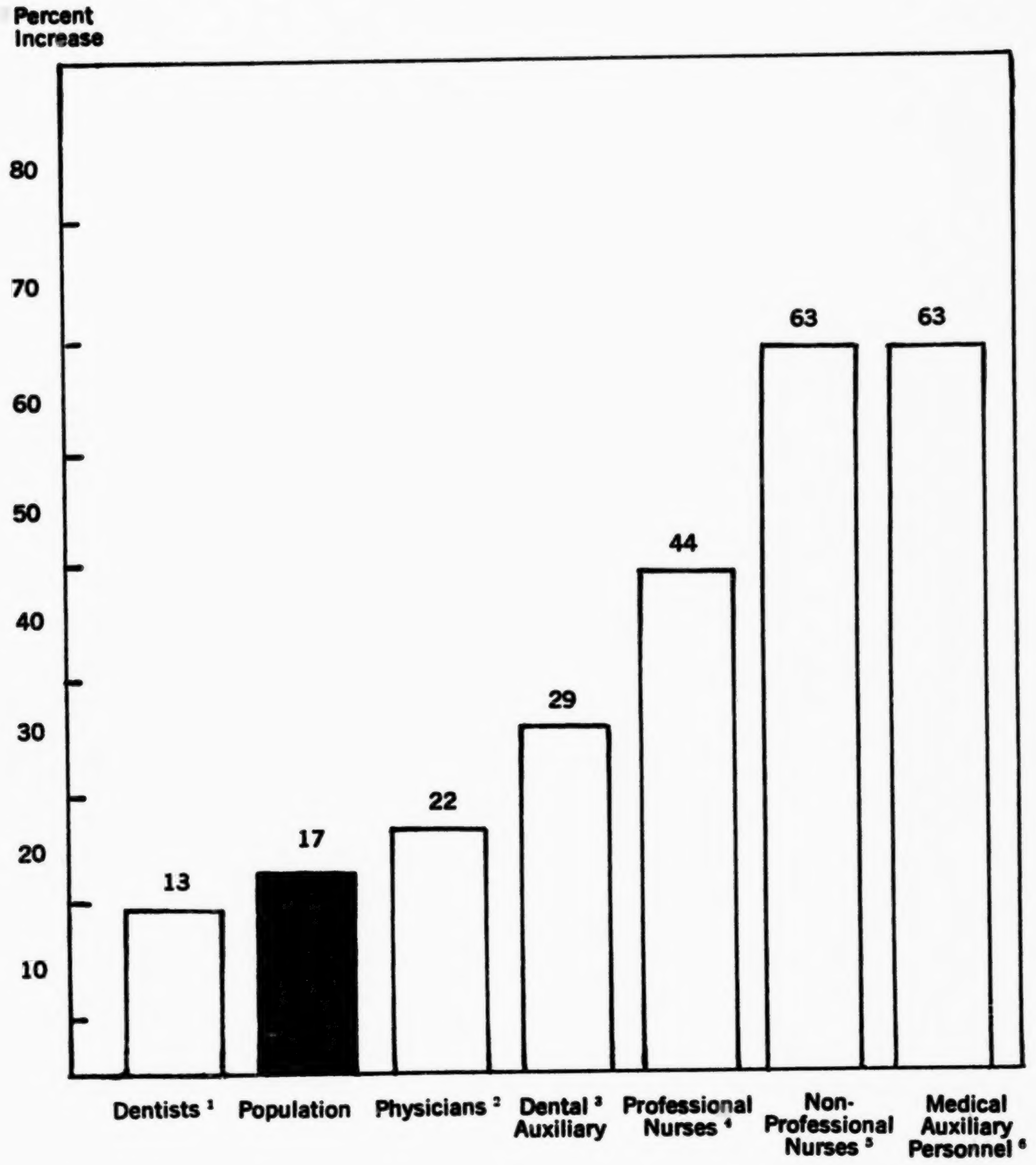

FIGURE 3.—Percentage Increases From 1955–1965 in Population and Health Manpower

[1] Active Non-Federal Dentists.

[2] Active M.D.'s.

[3] Dental Hygienists, Assistants, and Laboratory Personnel.

[4] Active Professional Nurses.

[5] Practical Nurses, Aides, Orderlies, and Attendants.

[6] Radiologic Technologists and Clinical Laboratory Personnel.

Note: See Appendix I, Table 1 for details and sources.

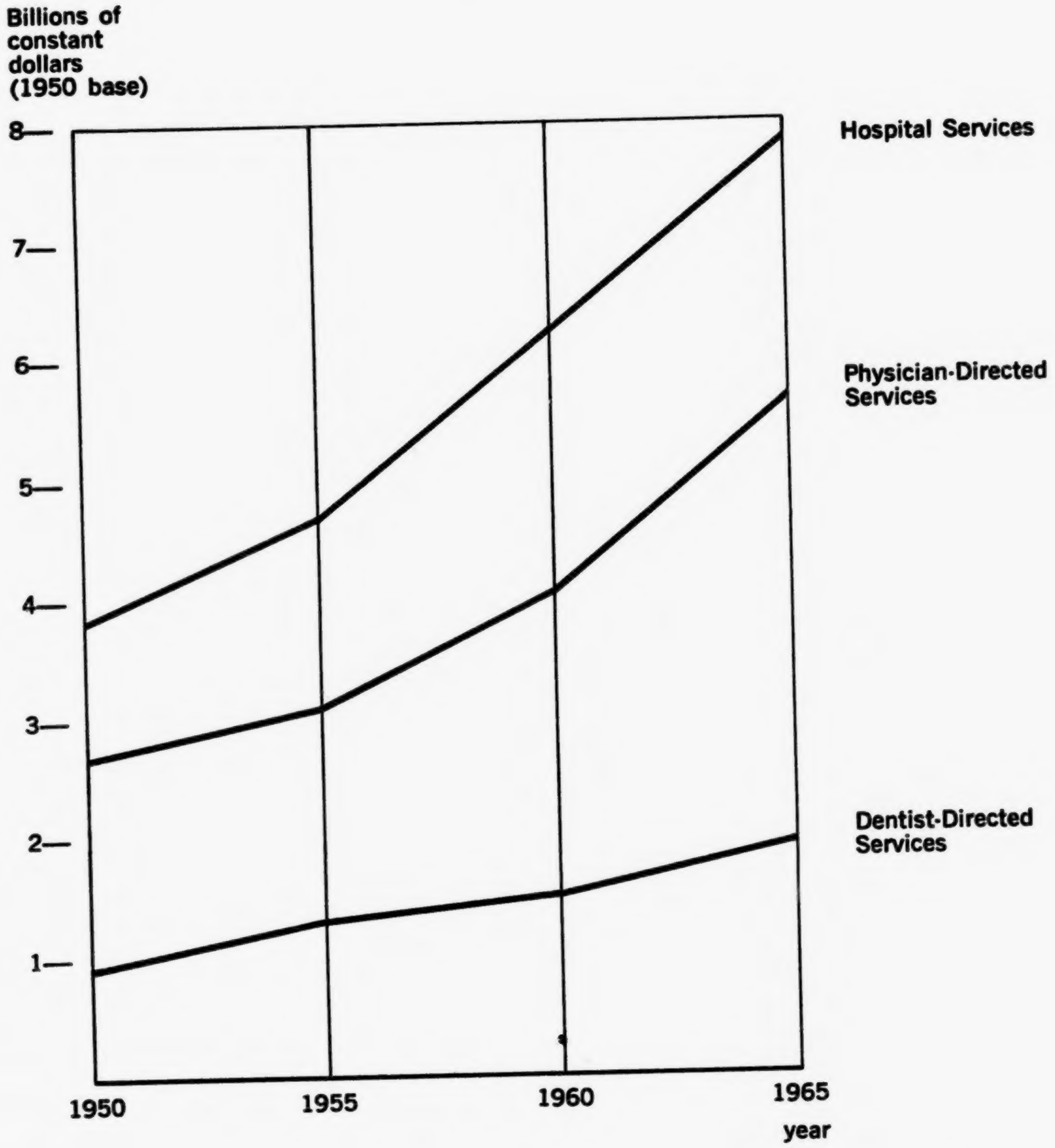

FIGURE 4.—Trends in the Production of Health Services[1]

[1] Expenditure figures are for each of the three types of health services, deflated (to a 1950 base) by an index of price and fee changes for that particular service. The figures thus provide estimates of the real change in output over time.

Note: See Appendix I, Table 2 for details and sources.

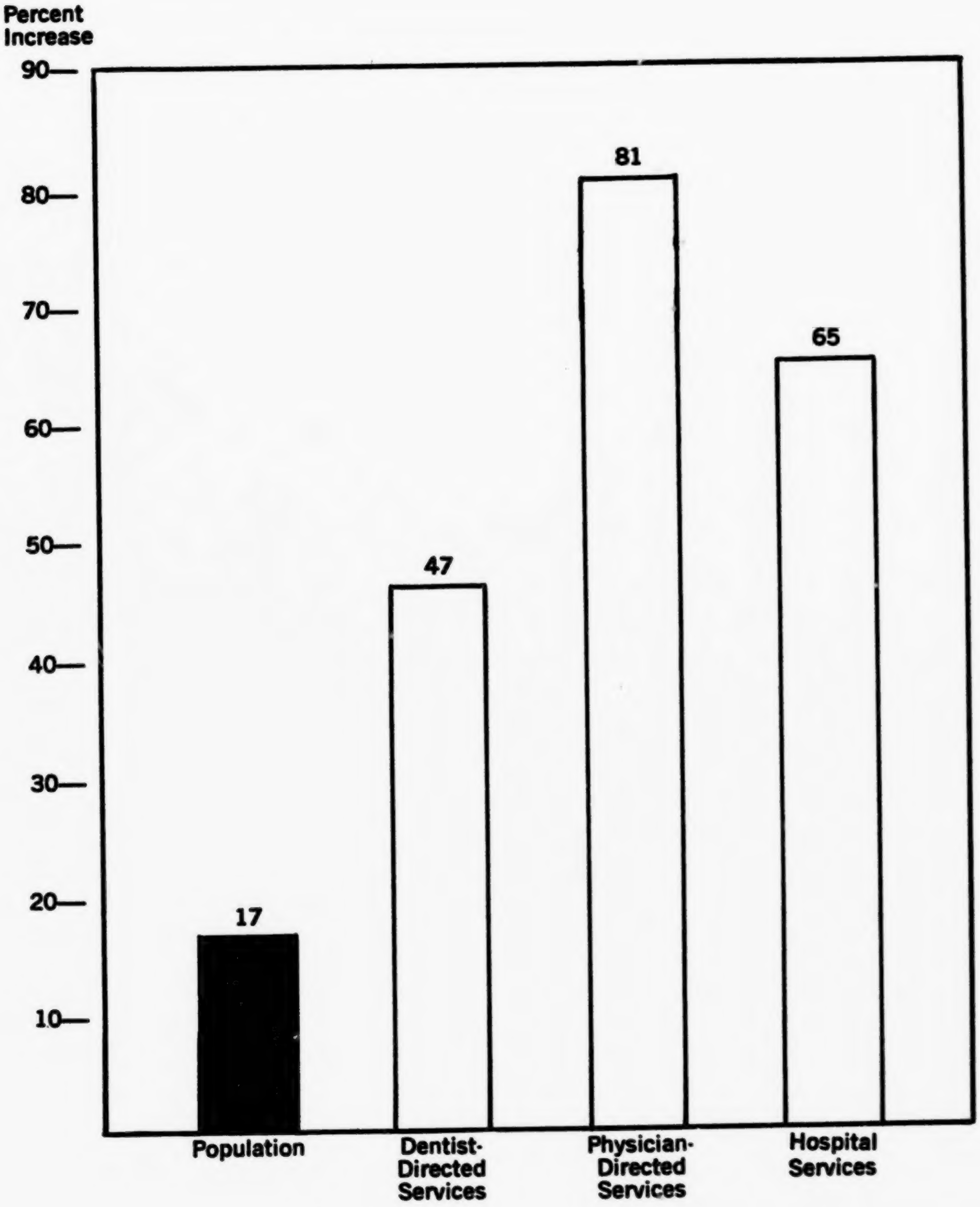

FIGURE 5.—Percentage Increases From 1955–1965 in Population and Health Services

Note: See Appendix I, Table 2 for details and sources.

The health sector has demonstrated during the past decade its ability to respond to increased demand. While the supply of physicians and dentists has not responded rapidly to increased demands for health care, the supply of nurses and auxiliary personnel has expanded remarkably. Furthermore, the lead time for the training of health personnel—with the exceptions of physicians, dentists, and nurses—is relatively short; thus a rapid response to rising demands is possible. The serious policy questions therefore relate to the adequacy of the future supply of physicians, dentists, and nurses. Each of these professions is discussed in turn below.[7]

B. Supply of Physicians

1. Physician Shortage

The Commission believes that there is currently a shortage of physicians and that this shortage will worsen in relation to growing demand, despite the expected increase in the supply of physicians in the years ahead. To understand why this shortage exists, it is essential to distinguish between the services provided directly by physicians to patients and the services provided to patients under the direction of physicians. Because physicians have rapidly increased their use of auxiliary personnel, diagnostic equipment, laboratory facilities, etc., services provided under the direction of physicians have increased far more rapidly than has the number of physicians. If the "productivity" trends of the last decade continue, the output of medical services per physician will increase by 50 percent between 1965 and 1975.

Even under the most pessimistic assumptions, the growth in the supply of physicians is expected to keep pace with population between now and 1975. Given the expected increase in output per physician, there will be at least a 50 percent increase in the per capita supply of physician-directed medical services. Moreover, hospital services, which complement and sometimes substitute for those of the physician, will also increase more rapidly than population.

On the other hand, for that component of medical care which can be supplied only by the physician—direct consultation between patient and physician—growing shortages are apparent. A particularly serious aspect of this shortage is the difficulty of gaining entry into the medical care system. The definitive evaluation of an illness should be made at the highest level of competence with the least possible delay. Once he is undergoing diagnosis or treatment, the patient is accustomed to having various tests and procedures carried out by non-physicians. But for the initial judgment, he expects and requires the personal attention of a physician. Delay in diagnosis and treatment is at the least frustrating and at times dangerous. The qualitative improvements in care which may be indirectly responsible for the delays are neither apparent to nor appreciated by a patient unable to see a physician.

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[7] A detailed analysis of demand and supply relationships in 1975 for these categories of personnel, is given in Appendix V, Volume II, "Health Manpower in 1975—Demand, Supply, and Price." That Appendix provides the supporting material for the discussion in the remainder of this section.

A number of factors appear to account for the seemingly contradictory trends of increasing medical services and decreasing availability of direct physician contact. These factors arise, fundamentally, from the continuing rapid increase in medical knowledge which has greatly enhanced the physician's ability to control illness, but which has altered his method of practice in ways that lessen his availability to individual patients.

Specialization. The most extensive change in medical practice has been the trend toward specialization, an inevitable consequence of the rapid increase of medical knowledge. Less than 2 percent of today's medical graduates go into general practice, and the role of family physician is increasingly taken by internists and pediatricians. Specialization has decreased the numbers of physicians available to provide care for the entire family and has resulted in a reduction in the number of persons seen per physician. Surveys of the National Center for Health Statistics show that between 1959 and 1964 the total number of visits to physicians increased by only 4 percent, while the number of physicians in practice increased by 8 percent. However, the large increase in services provided under the direction of physicians (81 percent between 1955 and 1965, as mentioned earlier) indicates that the amount of care provided per visit expanded far more rapidly than the number of visits.

Managerial, clerical, and other nonmedical responsibilities. While the use of auxiliary personnel permits extension of the physician's ability to provide care, it also requires that he spend an increasing amount of time in supervisory duties, thereby reducing the time spent in direct patient contact. As the practice of medicine continues to grow in complexity, the physician's managerial responsibilities will also continue to increase, further curtailing his time available to patients. Increased complexity also characterizes the methods of payment for medical care. As a consequence, the physician has to spend larger amounts of time fulfilling administrative requirements of government, insurance carriers, and legal responsibilities.

Hospital services by physicians. The growing importance of the hospital as a place for providing medical care has necessitated an increase in the number of hospital-based physicians and in the amount of time spent by private practitioners in the hospital. Although many of the hospital-based physicians provide ambulatory care in the hospital outpatient department or emergency room, the overall result has been to decrease the availability of physicians at what has customarily been the first point of call—the physician's office.

We believe that the factors discussed above account in large part for the increasing difficulty in obtaining convenient and timely access to the personal services of physicians. This difficulty has worsened in spite of a 5 percent greater increase in the number of physicians than in population between 1955 and 1965. For the decade ending in 1975, population is expected to increase by 13 percent and the supply of physicians by 17 or 18 percent. This slight relative increase in the supply of physicians cannot outweigh the forces acting to decrease access to them.

2. Additional Needs for Physicians

While the need to increase the number of physicians above presently planned levels is clear, the extent of the increase required is uncertain. The answer will depend, in part, upon how successful we are in improving the medical care system in ways that will conserve the physician's valuable time. It will also depend upon whether we undertake a number of highly desirable actions which will add further requirements for physicians beyond those already discussed.

Care for the disadvantaged. In order to provide adequate care for the disadvantaged, a substantial increase in the numbers of physicians will be required. The reasons for the present inadequate care of these groups are complex, and the overall shortage of physicians is not the only limiting factor. Therefore, simply increasing the supply of physicians will not significantly alleviate the existing problems. Nevertheless, if effective health programs for these groups are designed and implemented, there will be additional demand for physicians' services. Some indication of the size of this demand can be gained from data collected by the National Health Survey.[8] They show that, if per capita expenditures for physicians' services of families with incomes under $4,000 (in 1962) should rise to those of families with incomes of $4,000–7,000, national expenditures on physicians' services would increase by 8 percent. Since individuals in the low income group now receive a substantial amount of free care, the 8 percent figure is probably an overestimate. On the other hand, persons with low income frequently have more health problems than the rest of the population and therefore might require more physicians' services than are now received by middle income groups. On balance, an additional demand of 8 percent for care of the disadvantaged is probably a reasonable working figure.

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[8] National Center for Health Statistics, *Medical Care, Health Status, and Family Income,* Series 10, Number 9, May 1964.

Full-time hospital staffs. The increasing shift of medical care to the hospital has not only diminished the time available to practitioners for home visits and office practice; it has also led to an increase in the number of full-time physicians on hospital staffs. While the most acute need for full-time or part-time physicians has been to staff hospital emergency rooms or clinics—to which patients are turning more and more in lieu of private practitioners—the need extends also to the rest of the hospital, and applies particularly to the intern and resident staffs. Only 75 percent of the available positions in approved intern and residency programs are now filled.[9] To fill all positions would require an additional 3,500 graduates each year.

The shortage of interns and residents is undoubtedly exaggerated by the inefficient way in which they are used. Their low salaries have made them a very inexpensive way of providing medical services in hospitals, and excess demand by hospitals for such trainees will continue as long as their salaries remain far below the costs of obtaining equivalent services from practicing physicians.

Nevertheless, hospitals are increasingly using full-time chiefs of service and other staff physicians, as well as interns and residents, to improve the quality of the care they provide. As hospitals move to acquire more physicians, the number available to provide care outside of the hospital will be reduced.

New demands from biomedical advances. Current expenditures for biomedical research exceed two billion dollars annually. The development of certain cures or preventives, such as immunizations for polio and measles, may reduce existing demands for physicians. More frequently, however, wholly new modes of treatment (such as the artificial kidney, open heart surgery, and organ replacement) will add to demand. Furthermore, the frequency of disease is changing from acute illnesses, from which the patient either died or quickly recovered, to chronic illnesses which requires protracted care. Perhaps the biggest potential demand will arise from medical advances that make possible the treatment of diseases which were formerly untreatable. An example is the care of mental illness. The effectiveness of present methods is so limited, and so much physician time is required, that greater numbers of psychiatrists would have little impact on the overall problem of mental illness. But if the introduction of psychoactive drugs is any indication of future trends, major advances in treatment can be expected. The result surely would be to require and attract more physicians than are necessary now, when most patients with mild psychiatric disorders receive no custodial care and often little or no treatment.

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[9] Journal of the American Medical Association, Volume 198, No. 8, November 21, 1966.

Demands for educational opportunity. At present, there are more than two qualified applicants for each of the roughly 8,800 places in the entering classes of medical schools. Furthermore, the current increase in bachelor degrees indicates that by 1975 there will have to be spaces for 16,500 new medical students if the present inadequate ratio of medical school spaces to bachelor degrees is to be maintained. This figure is 50 percent above the projected 1975 capacities of medical schools. Education to the limit of an individual's capabilities is, like the right to health care, becoming an established national policy. It is likely that medical schools will be under heavy pressure to respond to demands for educational opportunity as well as demands for medical care.

Continuing education. There is need for a greatly expanded program of continuing education for health professionals. The reasons for this conclusion are discussed later in this Report. At this point, however, we should note that a successful program of continuing education will further diminish the time that physicians have available to spend with patients. Continuing education for two weeks a year would be equivalent to a 4 percent reduction in the available time of physicians. If continuing education programs become widespread, they will provide an additional requirement for expansion in the output of medical schools.

Foreign medical graduates. Almost 7,000 graduates of foreign medical schools[10] enter the United States each year. Approximately 4,500 of these become interns or residents in hospitals whose training programs are approved by the American Medical Association. In these programs they receive training and also assume major responsibilities for patient care. There is evidence that many of the remaining 2,500 foreign medical graduates (FMG's) receive training and provide care under poorly supervised conditions in programs that have not been approved. Our permanent supply of physicians is presently augmented at the rate of 1,400 a year by FMG's who become fully licensed to enter practice, and by an unknown number who remain without licenses. Approximately 17 percent of new licentiates and 28 percent of interns and residents in approved training programs are FMG's. In total, there are currently more than 40,000 FMG's in the United States, comprising 14 percent of the active physicians in the country.

Although most FMG's come to this country ostensibly to obtain further training for the benefit of their countries of origin, they are given major responsibilities for patient care while they are here. Many of those who are given such responsibilities do not meet the minimum standards of professional competence which are required of graduates of American medical schools. Furthermore, much of the training that they receive prepares them poorly for the problems that they will face when they return to their own, less developed countries. The panel of the Commission that studied foreign medical graduates in detail documented the need for a new national policy regarding FMG's. We share their view and recommend that *the United States should produce a sufficient number of physicians to meet its needs and, further, that it should assist other countries, particularly developing nations, to improve their systems of medical education and their levels of medical practice and public health.*

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[10] Schools outside the United States or Canada.

Implementation of such a national policy regarding FMG's should in no sense bar immigration to the United States of anyone from a developing country just because he happens to be a physician. But if this Nation produces enough physicians to meet its projected needs, there will no longer be reason to accord FMG's the immigration priorities which they now receive because they are in a category of critically short manpower.

Such a policy will also create a need for physicians beyond that necessary to replace the FMG's who are now imported to care for United States citizens. Assisting developing nations will require the expansion of educational exchange programs with those countries as well as the provision of high quality graduate medical training for those FMG's who come here to learn. Expanded exchange programs will require more American physicians overseas, which means that they will not be available for patient care and for teaching in this country. At the same time, the graduate training programs for FMG's who come to the United States will have to be specially designed. They must either fit the trainees for medical practice when they return to their own countries or, for those planning to stay here permanently, they must qualify them to meet the standards of medical education and health care prevailing in the United States. Again, this will require the time of American physicians to provide the training and to supervise the trainees.

Because these policies will result in a marked reduction in the supply of foreign medical graduates available to provide patient care in the United States, steps to implement them must be coordinated with actions to increase the output of American medical schools. As FMG's are phased out over a number of years, an eventual expansion of 20 percent above present enrollment in U.S. medical schools will be necessary to replace this specific source of manpower.

In summary, changes in public policy, introduction of new programs, attempts to fill unmet health and educational needs, and predictable but undefined advances in research can all be expected to add substantially to the future requirements for physicians. Although all of these events may not come to pass, the long lead-time required to bring about significant changes in the supply of physicians makes it prudent to assume that some of them will occur. If we take preliminary steps now to expand medical school capacity throughout the first half of the 1970's, the full benefits of the expansion program will not be realized until 1979—more than a decade in the future.

3. Increasing the Production of Physicians

In order to reverse the trend toward the decreasing availability of the personal attention of physicians, and to anticipate additional needs that are likely to arise in the future, we make the following recommendations:

The production of physicians should be increased beyond presently planned levels by a substantial expansion in the capacity of existing medical schools, and by continued development of new schools.

Federal funds in support of capital or operating costs of education should be provided to a medical school in such a way that they create economic incentives for the school to expand enrollment while improving its quality. Such incentives should be based on increases in the absolute numbers of medical students.

At least initially, primary dependence must be placed upon expanding the capacity of existing medical schools. In contrast to the development of new schools, expansion can be accomplished quickly and economically. Many medical schools are now quite small, and the average graduating class is well under 100 students. Although faculties of medical schools often resist expansion because they believe it may lower the quality of education, a recent summary of available studies [11] shows that class size is unrelated to academic aptitude of students, achievement on National Board Examinations, attrition rates, or ultimate career choices. We see few drawbacks to expansion, and great advantages in terms of saving time, reducing initial investment and overhead expense, and conserving teachers. New medical schools provide benefits to the community in which they are built above and beyond the education of new doctors. These benefits are important, and we urge continuation of legislative authority to assist in the construction of new schools. However, legislation arising from the need for more physicians should give initial emphasis to the expansion of existing schools.

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[11] Sanazaro, P. J., "Class Size in Medical Schools", *The Journal of Medical Education,* Volume 41, No. 11, Part 1, November 1966.

We have not reached a firm conclusion on the precise amount by which physician production should be increased. We do, however, wish to make two comments:

1. Although the need for more physicians is urgent, the costs and dangers of crash effort to increase production appear to outweigh the benefits. Graduates of U.S. medical schools only increased from 7,000 in 1955 to 7,400 in 1965, but they are expected to exceed 10,000 by 1975. The numbers of physicians are such that very substantial increases in the annual production of physicians (e.g., 8,000 or 100 percent increase) will affect the total number (280,000) only slowly. In the short run at least, the dominant constraint will be the capacity of medical schools to expand without lowering the quality of their educational programs or incurring unreasonably high costs. Therefore, plans for increasing production should be drawn up in close cooperation with the leadership of medical schools and their affiliated institutions. Although currently planned expansion will not be sufficient to meet the anticipated needs, the setting of new goals should be tempered by the realization that medical schools' enrollments are already increasing at the fastest rate in decades.
2. Curriculum review aimed at reducing both the length of formal medical education and the length of specialty training should be considered as an integral part of any expansion plan. By lessening the delay in earning power, such a revision would help to attract additional highly qualified individuals who would otherwise be unable to consider medicine as a career choice. More important, it would release substantial quantities of teaching and physical resources that could then be used to expand educational capacity.

C. Supply of Dentists

During the last decade, the supply of dentists and the output of services per dentist increased less rapidly than those of physicians. Nevertheless, the shortage of dentists does not appear to be comparable to that of physicians. Since dental health needs are frequently more susceptible to planning and scheduling than are many medical needs, delays in reaching a dentist do not generate the same degree of public concern as obstacles to finding an available physician.

However, most persons in low income families still do not receive adequate dental care. But their failure to obtain dental care results more frequently from apathy, ignorance of dental hygiene, and financial barriers than from actual unavailability of dental services. It also reflects the relatively low priority that many persons give to dental work, as well as the lack of coverage for dental care under most health insurance plans.

Many dental services, such as preventive measures, minor fillings, and orthodontic care are considered luxuries rather than necessities. Consequently, the use of dental services is far more dependent upon price and income changes than is the use of medical services. The differences in attitudes toward dental and medical care are evident in results of the National Health Survey. Average expenditures per person for all medical services range from $93 in families with incomes under $2,000 to $160 in families with incomes in excess of $7,000. Although this may seem like a large variation, it is less than that for dental services, where the yearly per person expenditures range from $9 to $29 as family income goes from under $2,000 to over $7,000.[12]

In short, significant discrepancies between supply and demand for dental services do not appear to have developed. Because of the sensitivity of demand to income, however, a rapid rise in personal income during the next decade may increase demand well beyond supply.

Our calculations, based on the experience of the last decade, indicate that the demand for dental services (in current dollars) will increase between 100 percent and 125 percent in the period 1965–1975.[13] The supply of dentists is expected to increase by only 16 percent; however, as a result of a continued increase in the use of auxiliary personnel and further improvements in dental technology, the total productivity of dentists will increase much more—perhaps by as much as 50 percent. Such an increase would, however, still fall short of the expected increase in demand.

In order to meet the growth in demand, the number of dentists needs to be increased above planned levels. We therefore recommend that *in order to increase further the production of new dentists, schools and students of dentistry should be provided the same incentives as those recommended in this Report for schools and students of medicine.*

With respect to the mechanics of increasing the number of new dentists, each of the points made in the section on increasing the number of new physicians is generally applicable to dentistry.

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[12] National Center for Health Statistics, *Medical Care, Health Status, and Family Income,* Series 10, Number 9, May 1964. Expenditure figures are for 1962 and have been adjusted for differences in age distribution in the various family-income categories. See Table 3 and Table 6 of that publication.

[13] Although fluoridation may reduce the incidence of cavities in children during the next decade, this is not expected to reduce significantly the overall demand for dental services.

D. Supply of Nurses

About two-thirds of all active professional nurses are employed in hospitals and related institutions. Of this portion, approximately 85 percent work in short-term general hospitals. Thus, increased use of such hospitals will be a major factor in determining future demands for nurses. Our projections indicate that growth in the size of the population and changes in its age distribution, together with a continuation of the trend toward greater use of hospitals, will cause hospital patient days to rise by 38 percent in the 1965–75 period. Early indications are that the Medicare Program has brought an increase of 15–20 percent in the use of hospitals by persons over 65 years of age; if these indications prove to be correct, this program will add another 4 percent to hospital use over the longer run—raising the total expected increase to 42 percent.

If the ratio of professional nurses to patients is assumed to rise by 10 percent in the next decade, as it did in the last,[14] a 42 percent growth in hospital patient days should be accompanied by a 56 percent increase in hospital employment of professional nurses. If the same rate of increase applies to other health institutions, total institutional requirements for nurses will grow by approximately 210,000 between 1965 and 1975. Although demands from other sources [15] are expected to grow less quickly, they may still be sufficient to generate demands for approximately 80,000 additional nurses.

These projections indicate a rise in overall demand for nurses of approximately 300,000, to a total of 900,000 by 1975. If recent trends in the production and attrition rates of nurses continue, the supply of active nurses will increase by about 200,000 to a total of 800,000 by 1975. It thus appears that the growth in demand during the period will exceed growth in supply by about 100,00 nurses, further exaggerating what is already considered by many to be a critical shortage.

In contrast to the situation for physicians and dentists, the present and projected shortages of nurses do not reflect a shortage of training facilities or of nursing graduates. More places are available in nursing schools than there are candidates to fill them. Even more important, between 500,000 and 600,000 qualified nurses are not active in the nursing profession, although almost 300,000 of them have kept their licenses and registrations valid.

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[14] Sharp increases in nurses' salaries within the past year (e.g., 40 percent on the West Coast) may discourage hospitals from adding nurses as liberally as they have heretofore, and the nurse/patient ratio may not increase quite as fast.

[15] Physicians' or dentists' offices, private duty, public health, industrial and occupational health, nursing education, ambulatory clinics.

Given the large number of nonpracticing nurses, increasing the output of new nurses is not the best means of attacking the nurse "shortage". The most important actions are those which will make nursing a more attractive profession and thus entice trained nurses back to duty, as well as lower the attrition rates of students and new graduates. Accordingly, we recommend that *nursing should be made a more attractive profession by such measures as appropriate utilization of nursing skills, increased levels of professional responsibilities, improved salaries, more flexible hours for married women, and better retirement provisions.*

E. Education of Health Professionals

The education of health professionals has importance beyond that of meeting the future manpower requirements outlined in the previous sections. Subsequent parts of our Report explore ways of improving the provision of health services which require expanded and changed responsibilities for health professionals, and for the institutions which provide their training. The educational system must be able to keep abreast of scientific and social changes, and also anticipate the new demands in the next quarter century for which training should begin now.

We have concentrated our attention on physicians, dentists, and nurses. Our omission of ancillary health personnel does not indicate that we believe them to be unimportant. Quite the contrary. Our own analyses have shown that the great increases in productivity of health professionals have resulted mainly from increased use of ancillary personnel. In terms of their education, however, we have not included them because this subject has been extensively analyzed this year by a task force of the Department of Health, Education, and Welfare, and by a Federal interdepartmental task force as well. More important, a reallocation of Federal training funds has resulted in doubling the expected output of ancillary health personnel this year. The short lead-time for training these health workers permits rapid changes in output to meet expanding demand, in contrast to the long training period of health professionals, which requires many years. We stress, however, our conviction that ancillary health manpower will be indispensable in meeting the projected demands for health care, and we support the measures undertaken to increase their numbers.

In the succeeding paragraphs, we make some observations about the education of physicians, dentists, and nurses. They are not intended to be a comprehensive blueprint for the education of health professionals, but they contain recommendations which may help society to receive the maximum benefit from these highly trained individuals.

1. Education of Physicians

*a. **Funding Medical Education***—Medical schools today are faced with demands to increase the output of physicians, to train increased numbers of specialists, to conduct programs of continuing education, to expand research, and to take on additional community services. Despite the large amounts of money which have been provided to many of them in recent years, medical schools are unable to play an enlarged role in teaching or to undertake the basic educational changes necessary to meet the demands of increased enrollment and curriculum reform, along with these other responsibilities.

This ironic situation exists because of extended neglect of the educational function of these institutions at the same time that the research function has been generouslv funded, primarily by the Federal Government. This neglect, in turn, has resulted because the need for educational funds, and the increasing shortage of physicians, have only recently been publicly recognized by professional societies and the medical schools themselves. In the absence of any effective educational policy, and the financial support which implementation of such a policy could have made possible, the availability of funds for research has, by default, raised research within the university medical center so that it has become the primary function of the institution.

The results of this change have been both good and bad. On the one hand, research funds have furthered the development of full-time faculties, with a resulting increase in the variety and richness of the teaching program. Research and training funds have also provided the primary source for obtaining new faculty. General research and training grants have encouraged the initiation of new areas of research such as physical biology, genetics, and the behavioral sciences.

On the other hand, the failure to provide funds for education has taken away the prerogative of medical schools to maintain a balance between research and teaching. Most decisions regarding educational policy have been influenced strongly by considerations relating to research because of the availability of funds for this purpose. Furthermore, supporting the teaching function indirectly through support of research has greatly inflated and obscured the true costs of education. In addition, the Federal Government's practice of awarding research funds on a competitive basis has been disadvantageous to less affluent schools; they cannot afford the required cost-sharing of expensive research, and they are unable to attract researchers who have already obtained Federal support.

In our view, the only appropriate solution is direct funding of the educational function itself. This would sharpen the focus on the educational process and permit, for the first time, a true accounting of the educational costs for physicians. Moreover, it would provide funds to stabilize the core functions of the medical school and permit expansion of enrollment independent of the level of research.

In an effort to restore the balance between educational and research functions and enable medical schools to achieve the flexibility and independence needed to modernize curriculum and to expand enrollment, we recommend that *the Federal Government carefully explore ways to provide support directly for the educational function of medical schools.*

By appropriate funding we do not, however, mean a system of categorical grants which would be as restrictive for teaching as previous Federal monies have been for research. A better model would be the support which medical schools have received from state sources—support which has been provided to the institutions rather than to individual researchers, so that the educational officers of the schools have had flexibility for using it where, in their judgment, the need was greatest.

b. Financial Support for Medical Students—At the present time, tuition charges are set artifically low in order to reduce the financial barrier to medical students, while the remainder of educational costs are obtained from research funds, state appropriations, endowment and private gifts, and income from services. Even these low tuition rates, when combined with the delay of earning power, make many qualified individuals financially unable to enter the medical profession. As a result, 45 percent of medical students come from families in the upper 10 percent of income groups. Existing Federal loan programs are not adequate to cover living expenses, and we are concerned that the debts which students frequently incur through loans they obtain at commercial rates may create a need and desire for financial return in the practicing years that may influence the physicians' attitudes toward their social responsibilities.

In order to eliminate financial barriers to medical students, we recommend that *the Federal Government revise and expand present Health Professions Education Assistance Programs to make available to any medical student loans to cover the full costs of tuition and living expenses during formal professional education.**

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*I believe these recommendations are necessary until such time as free medical education becomes available in this country.—Mary Bunting

I do not regard the idea of shifting the full cost of tuition to the student subject to subsequent repayment in cash or indentured service as a progressive step in public policy; in a covert way it negates the long-established policy of public responsibility for providing educational opportunity for all according to their talents without reference to their ability to pay. Further, I do not believe that this proposal can really be expected to draw into medicine more students from lower income brackets.—Charles E. Odegaard

I wish to dissent from these recommendations. I believe the principle is not sound and that the recommendations are impractical, unnecessary, will not serve the purposes intended, and will be largely unacceptable to most students.—Dwight L. Wilbur

The repayment of such loans should not be restricted to dollar reimbursement. Although the total debt incurred would be relatively small compared with the earning power of a physician, the obligation appears large to a student, and the fear of dollar indebtedness may lead individuals not to undertake a medical career. Instead, *the student should be able to choose between repaying the loan from earnings over a period of years or giving two years of his time to approved national service apart from Selective Service obligations.*[16] *

We do not propose, of course, to specify details of the program, such as buy-out options or repayment by students who fail to complete their training. Rather, we urge that the proposal be explored. If it proves successful for physicians, consideration should be given to extending it to other health professionals and to allied health workers as well.

c. ***Admission Practices and Requirements***—Practices of admission to medical schools present a different sort of barrier whose solution is not amenable to a dollar remedy. Our primary concerns are with (1) admission procedures that do not permit either a full choice of medical schools for students seeking admission, or a full choice of applicants by medical schools and (2) arbitrary prerequisites for admission.

Since health manpower is a national asset, selection of students should be on a national basis, to allow institutions an unrestricted choice among the best qualified applicants and to permit students, in turn, to choose among the many institutions which might accept them. To do this effectively, there would have to be extensive coordination of applications if all prospective students were able to apply to all appropriate schools. An automated program providing such coordination is already in effect for matching medical graduates with internships. If this matching program were adapted to admission procedures, the applicant would list, in descending order of choice, all the schools to which he applied. Similarly, each school would list, in descending order of its choice, all students from whom it received applications. A student would then be matched with the institution highest on his list whose quota had not already been filled with applicants whom that institution had ranked even higher. This type of program for choosing interns met with extensive opposition prior to its inception, but it has been highly successful and now has universal acceptance. Accordingly, we recommend that *a national, computerized matching program be developed to facilitate admission procedures for medical schools* and urge that the proposal be given careful consideration.

To make national matching possible, educational prerequisites for admission of medical students should be more flexible, with challenge or equivalency examinations to demonstrate knowledge in the absence of "required" coursework. No single undergraduate curriculum can be expected to meet the varied admission requirements of all 88 medical schools.

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[16] E.g., Federal or state programs in poverty areas.

*See dissents on page 25.

A further improvement would be the discontinuance, wherever possible, of geographic residency requirements for admission. Where such restrictions have been intended to assure an adequate number of practitioners for a particular area, they have often been ineffective. Studies[17] have shown that other factors, such as general living conditions, educational opportunities for children, and the chance for professional contacts are much more important in determining the distribution of practicing health professionals. The disadvantage of such restrictions is that candidates more qualified than some who are admitted are rejected solely because they do not meet geographic residency requirements. As a consequence, the schools are forced to fill their spaces with local applicants of lower quality. We believe that such restrictions should be seriously reconsidered and discouraged where there is not adequate justification for continuing the practice.

d. Improving Medical Education—Once candidates are admitted as students to medical schools, they receive training which differs both in quality and in appropriateness to professional demands after graduation. We see at least two major areas of curriculum reform which need attention.

First, little account is now taken of the differences in educational preparation of entering students or of the divergent careers which students may pursue after graduation. The variety and flexibility available in undergraduate college education are replaced in most medical schools by a rigid curriculum in which all students take virtually the same course, in the same order. Not only is a single course of study inappropriate for preparing students for a variety of careers; it also fails to recognize the innate differences between individuals—in pursuing their own interests; in completing similar studies in different lengths of time or in different sequences: or in adjusting to personal or family obligations, such as those for women.

Second, the present medical curriculum was developed at the turn of the century when medicine was largely empirical and lacked a firm scientific base. Secondary school and college preparation in the sciences was uniform, and students with essentially identical educational backgrounds entered medical schools for professional training. More important, virtually all graduates were destined for solo general practice. Once graduated, the physician took with him his accumulated knowledge and skills and went to practice without the opportunities which exist today for close professional contact with other colleagues and medical centers. Therefore, it was felt to be important for schools to expose their students to as much of existing professional knowledge as possible.

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[17] E.g., Weiskotten, H. G., et al. "Trends in Medical Practice". *Journal of Medical Education*, 35: 1071–1121, 1960.

Stern, B. J., *American Medical Practice in the Perspectives of a Century*, New York: The Commonwealth Fund, 1945.

Last, J. M., *General Practitioners and Consultants in the National Health Service Preliminary Report*. Edinburgh: University of Edinburgh, Mimeographed, 1966.

In the past half century, however, the rapid evolution of scientific medicine has profoundly changed the characteristics of medical practice, as evidenced by the fact that 98 percent of current graduates enter a specialty. Yet, in the medical curriculum, new advances generally have been included as "add-ons"; as a result, the curriculum has become more inflexible, offering students little opportunity to deviate from basic requirements which were standardized many years ago. Perhaps more important for the future, the medical curriculum has not been adapted to give the student an understanding of the rapidly changing economic and social conditions which now oblige physicians to function beyond their immediate practice, and to recognize their full responsibility to society.

If stereotyped medical education is revamped, one of the results may well be earlier and increased specialization. We do not view this outcome with the alarm which such a possibility evokes from many educators. We live in a world of specialization, and the various career possibilities are becoming so diverse and well defined that it is increasingly wasteful to require prospective physicians to complete a long, inflexible curriculum before they pursue the sphere of medical care in which they are most interested. The concept of delaying specialization until after completion of medical school is increasingly untenable when more and more basic disciplines are taught at the college—and even high school—level.

Shortening formal coursework and training by the elimination of outmoded requirements, and introducing enough flexibility to allow the more able students to finish at their own speed, will indirectly increase the number of trained physicians. But in efforts to enlist manpower for teaching and for reforming the curriculum, there will be competition with both research and practice. Because each of these endeavors is so well established and remunerative, a necessary prerequisite should be to make the economic and social rewards for teaching at least commensurate with those for research. While the economic rewards of research and teaching may not be expected to equal those of practice, the situation will be greatly improved if those whose primary interest is education or research are accorded similar compensation and status. We hope that our proposal for direct support of the educational function of medical schools will achieve this balance between the two.

In addition to funding, medical educators will need a new array of teaching tools and methods, such as their colleagues in research and practice have developed for investigation and treatment. Automated teaching methods, for example, seem ideally suited for conserving teacher manpower and for permitting medical students to proceed individualy. Accordingly, we recommend that *the Federal Government markedly expand support specifically designated for research in the educational process for physicians and other health personnel.* In short, the Federal programs related to the education of physicians and other health professionals should influence the biomedical educational community in the same way that Federal support of biomedical research has done in the past. Medical educators have begun to experiment with new curricula, in established schools as well as in new ones. The general ferment which characterizes medical education today gives promise of significant change if support is forthcoming.

2. Dental Education

Our comments on medical education apply, with appropriate modifications, to dental education. Dental schools also have suffered from a lack of educational funds. These schools, however, have received support for education not from research funds but from fees obtained by operating dental clinics. As a result, the educational function has been overbalanced by service requirements. Direct funding for education would allow dental schools to determine more effectively the balance between service, education, and research.

Our other recommendations for medicine apply equally to dentistry, and we hope that they may be implemented for both professions.

3. Nursing Education

The education of nurses is carried out under three separate auspices. Traditionally, nurses have received training in three-year schools operated by hospitals. Diploma nurses from such institutions still constitute 78 percent of all nurses graduated each year. With the general trend toward college education for women, two other groups of nursing schools have begun to grow in importance. One comprises the schools operated by colleges and universities which give a bachelor degree in nursing after the completion of a four- or five-year course. They produce 15 percent of nursing graduates. The second group are the nursing schools in community and junior colleges, which grant associate nursing degrees after two years of study. Although they produce only 7 percent of all nursing graduates, their rate of growth is the fastest of all the institutions.

There is great controversy over the relative merits and eventual dominance of each of these approaches to nursing education. Increasing demands for highly specialized nurses, as well as increasing scientific content of the profession, suggest that the shift of nursing education to academic institutions will continue and increase. However, until universities and colleges are able to expand markedly their programs of nursing education, hospital-based schools should receive support so that they can continue to produce the nurses who provide the mainstay of patient care.

Although nursing and medical education frequently are carried out in the same hospitals, the combination of teaching with research and practice which characterizes medical education does not occur in nursing, and the staffs of the nursing schools rarely have responsibility for patient care. Assumption by nursing schools of responsibility for nursing services would not only improve the clinical teaching of student nurses, but would allow professors of nursing to combine research or practice with teaching, and would encourage innovation in both.

4. General Comments on the Education of Health Professionals

a. Responsibility for Education—The changes needed in the education of health professionals cannot be accomplished solely by an increase in funds, although an increase will be necessary. It will also be essential to define and fix responsibility for the educational process, which is currently divided among professional schools, colleges, vocational schools, junior colleges, professional societies, hospitals, and universities. In a single profession, up to five different and often uncoordinated groups may be involved in educating an individual. To develop a more effective educational philosophy and system, some institution must have overall responsibility. The most appropriate organization to fulfill this role is the university.

Other organizations must, of course, participate in planning and teaching. For example, hospitals (whose primary role is not, and cannot be, education) must continue to be an integral part of the educational establishment and closely related to the university. This is particularly true if a university does not operate its own medical center but relies on affiliation with community hospitals for its medical, nursing, and dental schools.

Furthermore, overall university responsibility should not be equated with a requirement that health professionals obtain a series of degrees or, for that matter, even a basic bachelor degree. Universities can provide many effective educational programs that need not be inhibited by the rigidity of degree requirements. On the contrary, it would seem both appropriate and necessary for universities to provide students with the skills required for contributing to the country's health services even if those students have no intention of obtaining a degree. Similarly, universities should be expected to expand postdoctoral programs for practicing professionals outside the confines of degree curricula.

We are convinced that an integrated educational system is a prerequisite to an integrated health manpower team, and we view the inclusion of formal professional training within the university as an opportunity both to achieve this end and to permit significant curriculum reform.[18] We therefore recommend that *formal education for all health professionals be conducted under the supervision of universities. This would include graduate training such as internships, residencies, and their equivalents.*

b. Functional Analysis of Health Care—The lack of curriculum flexibility, or of change in the distribution of responsibilities among health professionals, results from the almost total absence of critical, functional analyses of health care. By this, we do not imply a trade-school approach in which specific tasks would be matched to job descriptions, with rigid boundaries set up between them. Rather, we have in mind a continuing appraisal of the entire spectrum of skills required for health care, and an analysis and grouping of these skills into logical divisions which would, in turn, provide the specification of responsibility for various health professions. Perhaps the same divisions that now exist—doctor, dentist, nurse, etc.—would emerge from such an analysis. More likely, they would not, and continuing analyses would suggest new professional categories and new curricula appropriate to predictable responsibilities.

Health professional schools should perform the analyses themselves. We recommend that *they study their positions in the continuum of education, and develop and implement curricular revisions aimed at increasing intellectual stimulation and flexibility. Concurrently, health professional schools should initiate a continuing functional analysis of health care against which the substance of current curricula should be continuously revised.*

c. New Types of Health Professionals—The changing character of health care has brought into being a number of new categories of ancillary health personnel, some of which did not exist ten years ago. Similar changes have not occurred at the professional level, and the gap in training and responsibility between professionals and ancillary personnel is increasing. In medicine, the physician with 12 years' training after high school has to rely mainly on the nurse, who may have had as little as two years' professional education. There is a smaller but similar gap between dentists and dental hygienists. Such discrepancies are likely to result in inefficient use of the more highly trained and an unwarranted assumption of responsibilities by the lesser trained.

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[18] For an extensive discussion of the universities' role in professional training, see *The Graduate Education of Physicians* (Millis Report), Chicago: Council on Medical Education, American Medical Association, 1966.

The development of health personnel at the intermediate professional level has been repeatedly explored, and a few pilot programs are now underway. Because we regard the use of such personnel as a major factor in improving the utilization of health professionals, we recommend that *the Federal Government give high priority to the support under university direction of experimental programs which train and utilize new categories of health professionals.*

III. Improving the Health Care System

The demands for health care and the allocation of resources to respond to them are greatly affected by the system in which care is provided. Modifications of the system can reduce demands that absorb resources unnecessarily and can also increase the resources available to satisfy other demands.

To speak of a system is really misleading, because it implies that there is an overall organization of health care activities which functions as a coordinated unit. In fact, health care is characterized by multiple, inadequately coordinated subsystems, some of which are totally independent of each other. The ideal arrangement in which everyone has a personal physician who acts as the entry point into a well-articulated system of care, and every physician has appropriate contacts with other elements of care—hospitals, nursing homes, and referral specialists—is not always realized in practice. Of the 260,000 physicians in direct care of patients, 160,000 work essentially as solo practitioners, related to each other through a loose network of referrals. Only one-third of those in office practice are still general practitioners who provide care to a whole family; and, as noted earlier, less than 2 percent of current graduates go into general practice.

Payment for medical care is also a complex of methods. Of the physicians who are in office practice, 72 percent work on a fee-for-service basis. At the same time, more than 80 percent of the population carry some form of prepaid health insurance. Most of this is intended to pay for hospitalization, but more than 90 percent of the insured also carry surgical insurance and 30 percent are insured for major medical costs. Insurance itself varies in types and amounts of coverage and in types of benefits (e.g., cash indemnity, service, etc.). It is written by nonprofit organizations, commercial companies, and the Federal Government.

The complexity of the health care system and the fears surrounding illness are often bewildering to the individual seeking to protect himself and his family against the risks of illness, or to obtain care when it is needed. Furthermore, these same factors prevent the individual from exercising informed consumer judgment, and have allowed serious gaps in the coverage and quality of care to develop during the time that costs, both in dollars and manpower, have risen much faster than in other segments of the economy. As a consequence, the resource requirements evident for the future virtually compel that major changes be made to simplify and to make more effective the protection against the risks of illness while, at the same time, maintaining high quality medical care.

The projections that prompt us to propose major changes in the system for providing health care are based on extrapolations of trends established between 1955 and 1965, with modifications to allow for developments of recent years. Accordingly, we have assumed that medical care will continue to evolve in the future approximately as it has in the recent past; that medical care outside of the hospital will continue to be provided primarily by solo practitioners; that specialization and hospital-based practice will further increase; and that health insurance (public and private) will expand until nearly all the population will be covered for at least hospital-related expenses. In predicting the general economic environment, we have assumed that continued growth in economic activity and price levels will push the gross national product (GNP) in 1975 to a level 85 percent above that in 1965—a total of nearly $1,300 billion.

On the basis of these assumptions, total expenditures (in current dollars) on health care will increase by nearly 140 percent between 1965 and 1975 (Figure 6). The projections for physicians' services, general hospital services, and dental services are explained in detail in Appendix V. Other components were estimated by projecting recent trends in the shares of GNP devoted to these components, and then applying the projected shares to the assumed GNP for 1975. Expenditures for physician-directed services will rise by approximately 160 percent. The costs of short-term general hospital services will increase by more than 250 percent. Dentist-directed services will about double, and expenditures on drugs will rise by about 65 percent.

Even after allowance for an expected rise of 20 percent in the general price level, the projected expenditures for health services suggest a striking ten-year increase in the resource-cost of providing health care. Health services will account for approximately 7 percent of GNP in 1975, compared with about 5½ percent of the much smaller GNP of 1965. While GNP per capita is increasing by two-thirds, the cost of health services per person will nearly double—to a sum in excess of 400 dollars a year—and will result in an overall national expenditure approaching 100 billion dollars.

These projected increases in costs would be more acceptable if it were certain that they would be accompanied by proportionately dramatic increases in health. The only indicator of health levels for which reliable, consistent statistics have been collected over time is life expectancy. Although this in-

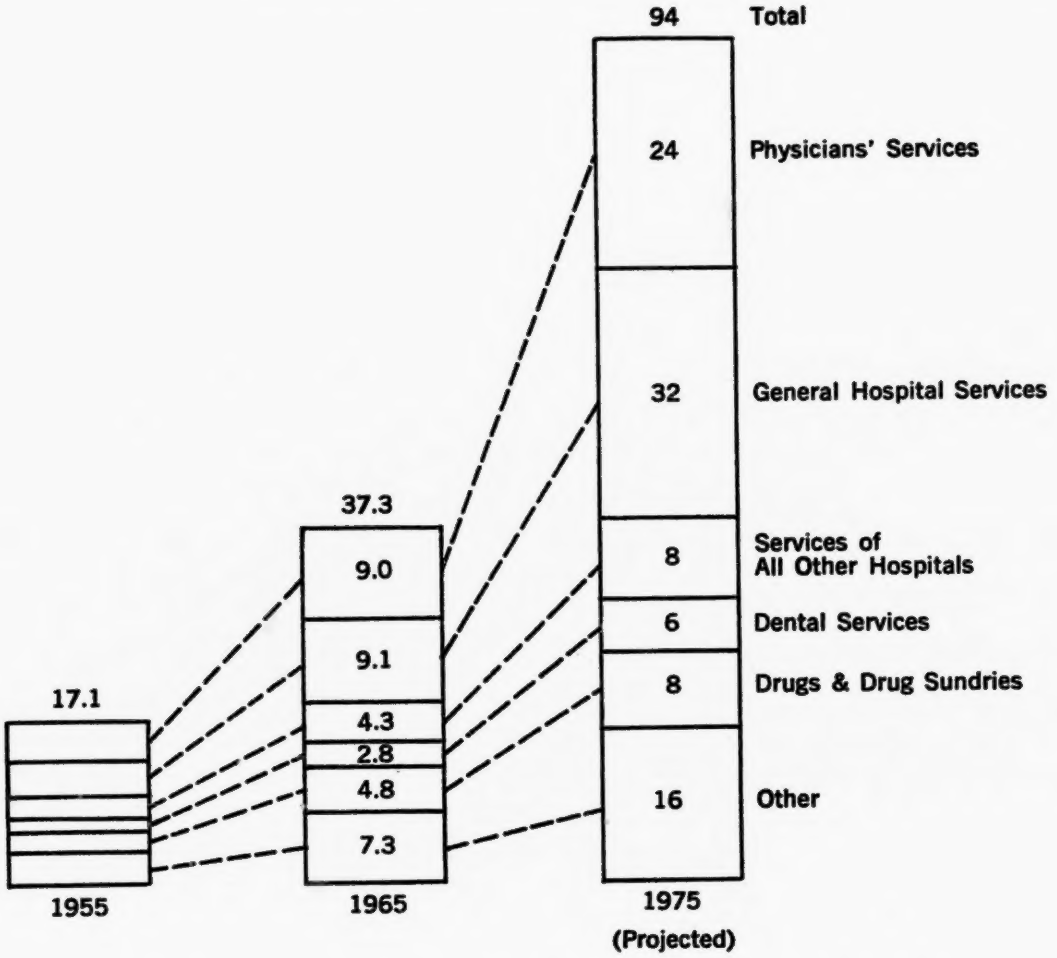

FIGURE 6.—Expenditures for Health Services and Supplies
(Billions of dollars)

dicator has many deficiencies even as an indirect measure of health—since it does not measure increases in the quality of life or the absence of disease—it does reflect major improvements in such things as infant mortality and the amelioration of previously fatal illnesses.

In terms of increased life expectancy, what have we gained from our additional expenditures on health services during the past decade? There is no reason, of course, to expect that a large increase in health expenditures would necessarily produce a large increase in life expectancy. But it is somewhat startling to realize that despite the advances in medical science and the greater use of health services, there has been a barely perceptible increase in life expectancy in the United States since 1954. For the male population, life expectancies have actually declined in some age brackets. The lack of increase cannot be explained by the attainment of an "upper limit" on life. The number of countries where persons live longer than in the United States has steadily increased in recent decades. In terms of average remaining lifetimes at age 10, our males rank 31st and our females 12th in the world.[1] Perhaps even more disturbing is the fact that this poor U.S. comparison covers a period of rapid increase in resources devoted to health care.

The real import of these figures on life expectancy, and the estimates of future expenditures for medical care, is that they bring into question the relationship between more medical care and better health and, as a consequence, the wisdom of continuing to increase expenditures for health services at the projected rates. Furthermore, increased medical services alone will probably have only limited effects on hard-core health problems, since the excess of demand over supply will continue to pull additional services to geographically and economically attractive areas which are already moderately high consumers of health service. It may very well be that expenditures for other goods and services which influence health (such as environmental sanitation, better housing, and education) will improve health more than will comparable expenditures for medical services. It is therefore especially important to prevent inefficient and uncoordinated medical services from consuming resources that could be used for these other activities.

To assure that this does not occur, the system through which care is provided must be improved in order to obtain the highest possible return from the resources committed. We have concentrated primarily on this goal; and we therefore attach particular importance to these conclusions and recommendations. They are divided into three sections. The first two cover specific problems which exist today: (1) gaps in the distribution and quality of health care and (2) the inefficient use of resources within the existing system. The third section describes overall methodology for improving the health system which must be brought to bear on these specific problems and on planning for the future.

A. Gaps in the Distribution and Quality of Health Care

1. The Disadvantaged

Health is only one of the problems which beset the disadvantaged, but the severity of health problems and their unique characteristics are not generally appreciated. As a consequence, many current efforts to correct them have been ineffective.

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[1] More extensive figures on our relative performance among nations are presented in Appendix I, Table 6.

Simple physical distance from available care is not a major barrier for either urban or rural residents. Even in rural areas, hospital facilities of 25 beds or more are within a 25-mile distance of all but 2 percent of the population, and only one-tenth of 1 percent have to travel more than 50 miles. Home-to-work commuting patterns of rural populations suggest that an hour's drive is not prohibitive for such routine purposes as shopping and entertainment, much less for the infrequent visits which might be needed for health care. In the urban areas, none of the population is more than 10 miles from a hospital.

Despite the physical proximity of care, indigent populations frequently have not received it. This failure may be due in part to the fact that distances of even a mile are prohibitive where adequate public transportation is not available. Similarly, the waiting time for care which is unpleasant but acceptable for a middle-class person may not be possible for the mother of a large family, who has no one to care for her children in her absence. And there are additional barriers of ignorance, fear, and inability to negotiate in a complicated system.

Many health problems of the disadvantaged are not susceptible of solution by dollars alone or by traditional health programs. Because the demand for health services will continue to exceed supply, simply increasing aggregate resources will not entice health personnel away from the more affluent areas in which they and their families prefer to live and work. Similarly, even with the lowering of financial barriers through Medicare and Medicaid, the disorganization and complexity of the health services industry will still prevent the disadvantaged from obtaining the care they need.

No clear-cut solution for care of the disadvantaged in our country has been developed. We believe that successful programs will have to be unique, intensive, and designed with recognition of the special problems of this particular segment of the population. Experiments underway[2] through the Department of Health, Education, and Welfare, the Office of Economic Opportunity, and state and local governments appear promising but are still too new to be adequately evaluated.

We urge that such experimentation be markedly expanded and, further, that successful innovations introduced for the care of the disadvantaged be examined for their applicability to the care of the general population. Conversely, there are undoubtedly many features in present methods of medical care which are useful and appropriate for the care of the disadvantaged. These, too, should be examined, since their use would avoid building a totally new system of care, would be more familiar and acceptable to health professionals, and would ease the transition for patients from one system to the other.

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[2] For example, Neighborhood Health Centers which bring services to people rather than waiting for people to come to services.

To conduct such programs with the scale and quality required to attain our goals, the larger base of private medicine must supplement the limited capabilities available through public sources. Until now, the burden of interest has been carried primarily by the government at all levels and by selected universities and hospitals. As with other problems of the disadvantaged to which the nation as a whole is turning its attention, health problems must come under concerted attack from all segments of society. We therefore make the following recommendations:

> *Programs for health care of the disadvantaged should be given highest priority and made available wherever needed.*
>
> *Innovations introduced experimentally for the care of the disadvantaged should be carefully examined for their applicability to the care of all persons. Conversely, programs for the care of the disadvantaged should incorporate elements from existing methods of medical care, wherever appropriate.*
>
> *Experimental programs to develop new methods of health care for the disadvantaged should be enlarged and should become the combined responsibility of physicians in private practice, universities, hospitals, voluntary agencies, and government at all levels.*

Any programs which are truly experimental are likely to have a high rate of failure. It is necessary, therefore, that criteria for the evaluation of such programs be drawn up as part of the programs themselves, to enable judgment against set goals and objectives. Most important, the public must expect and accept failure, and be willing to extract the worthwhile elements from the mistakes and to try again.

2. Quality of Care

a. The Quality Gap—Progress in medical science and technology has increased our ability to prevent and cure illness but, at the same time, it has greatly increased the difficulty of assuring that practice fully exploits the potential of current knowledge.

Reliance on quality controls in formal education and licensure have been the primary means of assuring that physicians use the best techniques and information available. But with the increasing pace of medical advances, these "one-time" controls are not enough; the physician's education must be continued as long as he practices. Greatly improved methods of diagnosis and treatment can be developed after he completes his training and, if he is unaware of the new developments, he will continue to use outdated and far less effective techniques and remedies.

Moreover, although the physician remains the central figure in the provision of medical care, he must increasingly rely upon others to assist him. The tests performed by medical laboratories, the medicines produced by drug companies, and the services provided by other professionals and by allied health personnel are all an essential part of today's health care. Not only must the physician apply current knowledge and techniques, but the essential services complementing his own work must meet equivalent modern standards.

The following are findings of a representative sample of studies of the quality of health services in the United States.[3]

1. The percentage of cases considered by expert consultants to have received fair or poor hospital care in two major teaching affiliates of medical schools and in two community hospitals were as follows:[4]

Patients receiving fair or poor care

	Teaching affiliates	Community hospitals
	Percent	*Percent*
Medicine	46	74
Surgery	39	60
Obstetrics/Gynecology	50	74

2. An evaluation of all major female pelvic surgery performed during a six-month period in a community hospital revealed that only 30 percent of the operations which resulted in castration or sterilization were justified in the opinion of expert consultants. This compared with a justification rate of 76 percent in two teaching hospitals.[5]

3. The medical records of a random sample of 430 patients admitted to 98 different hospitals in New York City during May 1962 were reviewed by expert clinicians. In the opinion of these medical reviewers, only 57 percent of all patients and only 31 percent of the general medical cases, received "optimal" care. In voluntary hospitals affiliated with medical

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[3] See Appendix I for a list of additional studies of the quality of health care.

[4] Leonard Rosenfeld, "Quality of Medical Care in Hospitals", *American Journal of Public Health,* July 1957.

[5] P. A. Lembcke, "Medical Auditing by Scientific Methods", *Journal of the American Medical Association,* October 13, 1956.

schools, 80 percent of all patients received optimal care, compared with only 47 percent of patients in proprietary hospitals.[6]

Objective surveys have consistently found that hospital care does not conform uniformly to the standards of best medical practice, and deviations from best practice appear to be significant and widespread.

Similarly, there are serious questions about the reliability and accuracy of some medical laboratories that perform the tests which are an essential component of modern diagnostic techniques. A recent survey[7] of such laboratories sponsored by the National Center for Communicable Diseases (U.S. Public Health Service) found that 25 percent of reported laboratory results on known samples were erroneous. Licensing requirements for such laboratories have not included adequate standards of accuracy and reliability.

b. Closing the Quality Gap

(i) **Licensure of Health Professionals**—The first requirement for assuring that health care approaches its potential quality is to make licensure effective to the limit of its capabilities. At the least, licensure throughout the nation should be based on minimum requirements which would assure to citizens a basic standard of quality wherever they might be when illness occurs. Beyond this, individual states should be encouraged to develop additional standards for higher quality controls within their jurisdictions. Such statutes will not be uniform in content, but they should be comparable in structure so that the differences can be easily recognized and evaluated.

There is also an urgent need for research to develop "model" provisions for specific licensure problems such as the delegation of medical responsibilities, the interstate recognition of licenses, and the grounds and procedures for disciplinary actions. These models should be policy-oriented and flexibly presented for the consideration of state legislatures and licensing agencies. To further both of these objectives we recommend that *professional societies, universities, and state governments should undertake, with Federal support, studies on the development of guidelines for state licensure codes for health personnel.*

(ii) **Continuing Education and Relicensure**—Once licensed and in practice, the health professional must have ready access to the latest medical knowledge. Medical journals and standard reference texts do not perform this function adequately for the busy practioner. New data processing techniques utilizing computers and adaptions of various teaching devices might greatly facilitate this task; they should be fully exploited as media for programs of continuing education.

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[6] M. A. Morehead, et al., *A Study of the Quality of Hospital Care Secured by a Sample of Teamster Family Members in New York City*, Columbia University School of Public Health and Administrative Medicine, New York City, 1964.

[7] *A Report on Laboratory Performance and Methods for Improvement*, U.S. Department of Health, Education, and Welfare, Public Health Service, June 1967.

However, simply making educational opportunities available will not assure their utilization by busy physicians unless sufficient incentives are provided to them.

One way of providing such incentives would be to relicense health professionals periodically on the basis of acceptable performance in programs of continuing education, or on the basis of challenge examinations for those who choose not to participate formally in continuing education. Both the educational programs and the challenge examinations should be directed to the practitioner's specialty, and not to the broad field of medical science as is done by initial licensure. Above all, the emphasis in such programs should not be punitive. Their primary purpose should be to make easily available to the practitioner the new knowledge which he now struggles to obtain.

There are many potential drawbacks to the proposal for relicensing. In the first place, licensure can be granted only by a governmental agency, and the extension of government jurisdiction over professional activity should be undertaken only after careful planning for safeguards against abuse. Second, present licensure authorizes any health professional to perform all the various activities permitted to his profession. In actual practice, physicians, dentists and even nurses are moving rapidly toward specialization. It may be that licensure will some day be granted on the basis of specialty practice as well as general practice. However, with present licensure laws, continuing education or examination in a specialty could probably not serve as a basis for relicensure which permits practice outside the area examined. Third, many existing programs of continuing education are totally inadequate, in both content and geographic distribution, to serve as a basis for relicensure. New programs would have to be developed and presented in ways that are tailored to the location and time requirements of busy practitioners. Fourth, since continuing education would become a basis for relicensure, mechanisms would have to be developed to accredit these programs professionally, as is now done for health manpower schools. Fifth, the responsibilities of health professionals vary so widely that special provisions would have to be developed for those whose work did not permit reasonable participation in educational programs. Finally, the institution of such a relicensure requirement might have to be prospective and applied only to those who enter professional schools after the start of the new requirement.

Similar obstacles accompany any change, and we do not regard them as reasons for not undertaking it. The dual program of continuing education and relicensure is a feasible method for providing the health professional with the new knowledge he needs and, at the same time, giving assurance to the public that a practitioner's knowledge reflects the most advanced results of medical progress. Health professionals are already licensed; and excellent, workable procedures, tested by long practice, exist for basing this governmental regulation on professional judgment. There is no reason why subsequent relicensure should be any less professional in its orientation, or should offer any greater possibilities for abuse. We therefore recommend that *professional societies and state governments should explore the possibility of periodic relicensing of physicians and other health professionals. Relicensure should be granted either upon certification of acceptable performance in continuing education programs or upon the basis of challenge examinations in the practitioner's specialty.*

(iii) **Foreign Medical Graduates**—At present, foreign medical graduates (FMG's) with less education and lower test ratings than those required of U.S. medical graduates are permitted to assume responsibilities for the care of patients.

The most fundamental criterion of professional qualification in this country is graduation from an approved medical school. No similar accreditation mechanism exists for foreign medical schools and, as a consequence, foreign medical graduates are required to pass a standard examination—administered by the Educational Council on Foreign Medical Graduates (ECFMG)—if they are to become eligible for training in an approved hospital or for state licensure. The examination is made up from questions previously used in the National Board Examination, but questions considered particularly difficult are screened out. Consequently, those who administer the examination consider it to be easier than that of the National Board.

The quality of preparation of foreign medical graduates seeking to come to the United States is indicated by their scores on the ECFMG examination. On examinations which were passed by 98 percent of the graduates of U.S. medical schools who took them, only 40 percent of the foreign medical graduates achieved a passing score. Furthermore, the scores of those who did pass were clustered just above the passing mark, rather than spread out through higher scores like those of the U.S. medical school graduates.

The record of FMG's on state board examinations, taken after graduate training in the United States, shows similar differentials. Examinations which were passed on the average by 96 percent of graduates of U.S. schools who took them were passed by only 60 percent of the FMG's. This figure has added importance because those who do not pass frequently remain in the United States, working in jobs for which the requirements for licensure are waived (e.g., many states do not require that physicians in state mental institutions be licensed).

A study[8] which compared the performance as physicians of FMG interns and residents with U.S. medical graduates in the same hospitals revealed that FMG's have a lower level of proficiency by all criteria of professional competence. Apparently, even prolonged periods of graduate training in this country do not uniformly overcome the deficiencies of prior medical education.

An immediate step to improve this situation would be stricter screening of FMG's prior to their assumption of responsibility for the care of patients. Although the passing score of the ECFMG exam could be raised, it would still represent a means of judgment different from that applied to U. S. medical graduates. For that reason, we prefer the test provided by the National Board of Medical Examiners which is now taken by more than 75 percent of medical graduates in this country and is recognized for licensure by 45 states. Accordingly, we recommend that *at a minimum, foreign-trained physicians who will have responsibility for patient care should pass tests equivalent to those for graduates of U.S. medical schools. The National Board of Medical Examiners provides an objective testing service which should be utilized just as it is for graduates of U.S. schools. Issuance of an immigrant visa on the basis of Third Preference[9] should be contingent upon satisfactory performance in the examination.*

But as we noted before, the fundamental criterion of professional qualification is successful completion of proper training. We are concerned not only that most FMG's do not seem to have received such training prior to coming to the United States, but also that their continued poor showing on tests after training in this country suggests that they are not receiving here the educational experience which they so badly need.

One reason for this is that most FMG's are not adequately prepared to work effectively or to learn satisfactorily in our complex system of hospital care. They frequently do not have an adequate knowledge of English, of medical sciences, or of the social and economic characteristics of this country. To assure that FMG's are in the best position to benefit from their training here, we recommend that *before foreign medical graduates are permitted to enter training programs with responsibility for the care of patients, they should be required to participate in an orientation and educational program during which their competence in the basic and clinical medical sciences, in English, and other appropriate fields would be assessed, and remedial instruction provided where necessary.*

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[8] See report of the Panel on Foreign Medical Graduates, Volume II.

[9] See the Report of the Panel on Foreign Medical Graduates for a description of various visas and priorities.

The length of each physician's participation would be determined by his individual needs and by subsequent evaluation of his progress. *Such orientation programs should be conducted by a consortium of medical schools, hospitals, and educational institutions on a regional basis.* While the establishment of such programs would not be feasible for the present large number of FMG's, stricter screening and the anticipated diminution in the number of FMG's should make possible the implementation of such a program over a period of years.

The other, longer-range solution is simply improvement of the training program which FMG's would enter after their orientation. We noted earlier, and would again emphasize here, the need to place FMG's in programs designed to suit their particular requirements. For most of them, this will not be the standard training given to U. S. graduates destined to practice in this country; rather, it will be training appropriate to the countries to which the FMG's will return. Such programs could also provide the opportunity for U.S. graduates, who wish to work abroad, to participate along with the FMG's and receive preparatory training that is not available to them here.

The growing problems of FMG's—the process of their admission to this country, the quality of the training they receive while here, their influence upon the quality and quantity of medicine in the United States, and the effects of the continued loss of trained personnel from the countries which provide them—will not be ameliorated as long as there is no focus of responsibility for change. The past vacuum of interest has permitted exploitation of FMG's by hospitals more interested in obtaining service than in providing teaching, and has allowed unsuspecting persons to receive care from physicians less competent than they should be.

In order to provide this focus of responsibility, and to permit a continuous assessment of the entire FMG situation, we recommend that *a Commission on Foreign Medical Graduates be established outside of government.* Financed by appropriately interested foundations and health associations, with contributions from the Federal Government if necessary, such a Commission could gather and analyze data on FMG's which are presently unavailable from any source. It could then provide advice to all institutions, in and out of government, which are involved with FMG's, and coordinate the various actions which may be taken to implement an overall national policy.

(iv) **Monitoring New Technologies**—The rapid introduction into health care of new technologies[10] (particularly those derived from the physical sciences) presents new problems of regulation and quality control, which cannot be handled by the individual practitioner. There is, to begin with, a need for certification of new devices, procedures, or data systems, as "patient worthy" before their introduction into the marketplace. Once certification has been granted, there is a need for quality control of regular production by random, calibrated sampling. Finally, there is a need to provide hospitals, health practitioners, patients, and even the manufacturers themselves with information, certified training, and standards for the use and maintenance of these devices.

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[10] Artificial kidney, high voltage X-ray therapy, ultrasonic diagnostic techniques, etc.

At present, some of these functions are performed by the Food and Drug Administration. We are concerned that, unless more extensive and direct measures are taken, wasteful or tragic misapplication of new technology may not only cause harm to individual patients but also close the door to the higher rate of technological contributions which we see in the near future. Four bills designed to avoid such mistakes have been introduced in the 90th Congress. One would amend the Food, Drug, and Cosmetic Act to assure the safety, reliability, and effectiveness of medical devices. The other three would create a national commission to study quality controls and manufacturing procedures of medical devices and to recommend minimum performance standards and feasible methods for Federal regulation. We have not tried to evaluate either the methods set forth in the proposed legislation or other possible alternatives. But it seems to us that, until an effective monitoring program is established, and perhaps even afterward as well, the National Bureau of Standards (NBS) should increase its interest in this field. Not only does the NBS have great experience in measurement and the setting of standards; but the increasing role of the physical sciences in medical technology fits with the scientific expertise of its staff. With the warning that great care must be taken to avoid stifling innovation, we recommend that *the National Bureau of Standards extend its interest in the field of medical devices and technology.*

New technologies and medical advances have also increased the complexity of procedures performed by medical laboratories. Under the Social Security Amendments of 1965, each state is now required to establish a certification program to qualify these laboratories for participation in Medicare. While this represents a first step in the right direction, what is really needed is a method to monitor the accuracy of results of tests by the laboratories, rather than a system of certification based solely upon the qualifications of the personnel in them. The development of such a monitoring technique has additional importance because states frequently use these standards for the certification of all medical laboratories in their jurisdiction, apart from their participation in Medicare. Accordingly, we recommend that *the Secretary of Health, Education, and Welfare, with* *advice and assistance of appropriate nongovernment groups, should develop methods of assuring the accuracy of test results produced by medical laboratories, both in and out of hospitals. Such methods could be used as a basis for the certification of medical laboratories to participate in Medicare and Medicaid.*

(v) **Accountability for Professional Actions by Peer Review**—Although better access to information and continuing education are valuable steps toward closing the gap between potential and actual care, they will not in themselves assure that practice conforms with current standards. They will not prevent the physician who has misplaced faith in his own abilities from attempting treatments and procedures beyond his competence. Nor will they protect the patient from the small minority of physicians who prescribe unnecessary drugs or perform unjustified procedures.

The best way of dealing with these special problems is to encourage physicians to be accountable for the proficiency and appropriateness of their medical practice. Such accountability means that a physician's actions should be subject to review and evaluation by his peers. Peer accountability of physicians is particularly important since patients and groups of laymen do not have the training and knowledge to evaluate the quality of medical services that they receive.

Peer review in various forms and different degrees of effectiveness is practiced throughout the medical profession. Existing methods include:

County Medical Societies—In most parts of the country, county medical societies have one or more committees available to the general public for handling complaints. When requested, these committees pass judgment on both the patterns of practice and the reasonableness of charges by physicians. Although individual patients have seldom utilized their services, these committees are being called upon with increasing frequency by the insurance industry, Blue Shield and Blue Cross, etc.

Foundations—In a few areas of the country, physicians have formed nonprofit medical foundations through which individual practitioners contract to provide comprehensive care within agreed fee limits. One of the foundations' major functions is to review *all* the insurance claims under the foundation-approved program for patterns of practice as well as for charges.

Group Practice—Major group practice arrangements frequently have extensive peer review of medical care provided by the group members. This review is routinely made on all practice and, in addition, specific case reviews are made on request. In some groups, results of routine review may be used as one basis for promotion.

Blue Shield and Blue Cross—These insurance plans review the quality and appropriateness of care using their own extensive experience, expert consultants, and review committees. The methods and extent of review vary greatly, but Medicare regulations will tend to increase their uniformity.

Utilization Review—The staffs of better hospitals traditionally have had committees to review physician practice in the hospital. The Medicare law makes it mandatory for any hospital participating in the program to have such utilization committees. It is less well known that Part B of Medicare, relating to physicians' services in or out of hospitals, requires the carrier which administers Part B to maintain utilization review procedures. Although all the carriers have not yet devised satisfactory means for this review, a number of carriers already have effective plans in operation.

Joint Commission on Accreditation of Hospitals—This voluntary commission[11] establishes minimum standards for quality of medical and hospital practice in this country and periodically, at intervals of one to three years, reviews each approved hospital to be certain these standards are met. Accreditation by this voluntary review program permits a hospital to participate in Medicare without additional state approval.

Many mechanisms for peer review already exist. The problem is to make them more effective and to extend their use.

Peer accountability for professional actions has led to fears that adverse judgments against a physician may be an invitation to suits for malpractice, or suits by those physicians who have received adverse judgments against them. Where peer review has been extensively used over a number of years, neither of these fears has been borne out by experience.

A further objection to peer review has been that because of lack of criteria, the quality of care is not susceptible to measurement, and that even if it were, it is difficult for anyone to apply penalties to his professional colleagues. Although more objective criteria of quality need to be developed, physicians have been able to judge their colleagues' medical practices in the various ways we have noted.

An example of how one mechanism works is provided by California Blue Shield, which makes peer judgments on the utilization of physicians' services both in the hospital and in their offices. Through a computerized file of claims made by its beneficiaries, Blue Shield is able to construct profiles of all the treatment received by any one patient and all the services provided to patients by any physician. These are selected automatically by the computer and reviewed by experienced professional personnel to find significant deviations from usual practice. Each questionable case is then investigated, and the results are presented to one of 42 county review committees, each appointed by its respective county medical society. Blue Shield is given a judgment by the review panel on the acceptability of medical practice in each case and on appropriate actions to be taken. Adverse judgments carry penalties which range from reprimands through the withholding of payments to permanent suspension from participation in Blue Shield.

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[11] Comprised of representatives from the American Medical Association, the American Hospital Association, the American College of Physicians, the American College of Surgeons, the American Nursing Home Association, and the American Association of Homes for the Aged.

Appeal from Blue Shield decisions may be made to the California Medical Association or through the courts. However, physicians rarely take legal action since peer judgment exerts a social force which physicians are reluctant to contest.

Undoubtedly, a variety of forms of peer review will be necessary in different circumstances and we have no tested solution to offer for all situations. But we believe that professional peer evaluation, applied at the local level, can provide specific and flexible judgments which are not available through generalized attempts by government to regulate the quality of medical care. (Furthermore, judgments at higher levels are less likely to permit the introduction of new, nonstandard therapies, and safeguards must be taken to assure that peer review at any level does not prevent innovation.) With the growth of insurance plans and other prepayment mechanisms, the economic leverage of this kind of review can become very important. Because the means for evaluating professional performance are an essential part of every major step toward improving the medical care system, we believe that our recommendations in this connection are among the most important in our Report. We recommend that *professional societies, health insurance organizations, and government should extend the development and effective use of a variety of peer review procedures in maintaining high quality health and medical care. These procedures should incorporate the following principles:*

Peer review should be performed at the local level with professional societies acting as sponsors and supervisors.

Assurance must be provided that the evaluation groups perform their tasks in an impartial and effective manner.

Emphasis should be placed on assuring high quality of performance and on discovering and preventing unsatisfactory performance.

The more objective the quality evaluation procedures, the more effective the review bodies can be. To enable greater objectivity, there should be a substantial program of research to develop improved criteria for evaluation, data collection methods, and techniques of analysis.

c. ***Emergency Care***—The problem of inadequate emergency care, particularly for persons having accidents, was presented repeatedly to the Commission. We have concluded that very large improvements can be realized if the proper steps are taken.

Accidents are the leading cause of death from ages 1 to 37 and the fourth leading cause of all deaths. In 1966, accidental deaths totaled more than 110,000, of which 53,000 were from causes that involved automobiles. About one of every eight beds in general hospitals is occupied by an accident victim. The bed days of these persons exceed those for all obstetrical needs and for all heart patients, and they are four times those required for cancer patients.

Only very limited resources have been devoted to research on accidents in contrast to the support given for the investigation of diseases with far lower morbidity and mortality rates. This is particularly unfortunate since most accident victims are in age groups with the best chances of survival. For the same reason, investment in the rapid availability of emergency care is likely to produce greatly improved survival rates. Current experience with soldiers in Vietnam has shown that, even in as difficult an area as the jungles of Southeast Asia, rapid evacuation, coupled with the availability of adequate materials and knowledgeable personnel, have reduced fatality rates among combat casualties to less than 2 percent.

The Panel on New Technologies has carefully set forth the elements of a program to deal effectively with accidents; many of these elements have been documented repeatedly in previous reports. What has not been done is to put them into effect and see what they can accomplish. The Federal Government in cooperation with professional societies, hospitals and other appropriate groups, could take the initiative by sponsoring pilot projects which would demonstrate what can be done, and how it can be applied in different forms throughout the country. The implementation of such programs is necessary in view of the likely continuation of trends in accident rates. At the same time they should not in any way be a substitute for all-out efforts at prevention. But prevention appears even more remote than treatment and, in any case, will never be totally effective.

Therefore, we recommend that *the Federal Government utilize the existing and detailed reports of the National Academy of Sciences, the American College of Surgeons, the American Medical Association, the American Hospital Association, and the Department of Health, Education, and Welfare as guidelines to implement a major program of research, development and the application of methods to prevent accidents and to provide emergency medical care. Such experiments should stimulate medical and administrative staffs* *of hospitals to try innovative methods which would bypass usual procedures and regulations, and would develop innovations in diagnosis and therapy.*

These programs should be directed not only at the actual care provided to emergency patients but also at the organization of the hospital and the emergency service itself. A first experiment might be the suspension of all admitting restrictions for physicians in cases of emergency. This should not be limited to cases in which the attending physician believes an emergency to be imminent (e.g., very high fever of unknown origin) but for serious cases in which he is unable to get a bed in the hospital where he has admitting privileges. Safeguards would, of course, be necessary to prevent abuse of this privilege in routine cases.

3. Civilian/Military Maldistribution of Critical Manpower

The problem of allocating health professionals [12] between the civilian sector and the Federal Government has become so large that it justifies action at the highest levels of government. Because the Government requires service from members of these professions above and beyond the liability for Selective Service borne by other citizens, it is important that such service be continuously scrutinized to assure that compulsory powers are used only where the job cannot be accomplished by some other means. We should state, at the beginning of this discussion, our conviction that avoidance of the higher dollar cost of a voluntary means of recruitment (such as competing for physicians in the open market) is not a valid reason for using the constitutional power of conscription to obtain employees for services which are not essential for national security.

a. Jurisdiction Over Health Professionals—We accept the principle of selection for military service by an individual's peers at the local level. For health professionals, however, the current Selective Service arrangement does not preserve this principle.

Under the present system, the jurisdiction over an individual remains with the local board where he originally registered at age 18. Most health professionals, however, are not called by the Selective Service System until after the completion of up to ten years of formal training beyond the high school level. Because of the relatively small number of schools for health professionals and the dispersion of accredited graduate training programs in the health professions, the long training period is very frequently one of great mobility. As a result of these factors, the decision to call or defer a young man training in a health profession is often made by a local board in an area in which he has not resided for a decade or more.

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[12] The term *health professionals* has a special use in this specific section. It refers to those categories of health personnel which are called by the Selective Service System on an occupational basis. Presently these include physicians, dentists, veterinarians, and optometrists.

For physicians, this problem is further compounded by the importance of graduate medical training to the service programs of many hospitals. The young physician taking his residency training in a teaching hospital is an important member of the medical staff. While learning, he also performs many services that would otherwise have to be performed by another physician, and he often is a major source of care for patients in these institutions.

Finally, because the records of each individual are kept at the point of his first registration, the members of a residency staff of any given hospital are likely to be under the jurisdiction of numerous local boards in several different states. As a result of the uncoordinated decisions of these separate local boards, it is possible for a hospital to lose a substantial part of its residency staff as a result of draft calls by Selective Service boards remote from the institution and unfamiliar with its needs and those of the community it serves.

In order to alleviate these conditions, we recommend that *the Selective Service Act be amended to provide for the automatic transfer of the records of every draft-eligible health professional, upon his graduation from professional school, from the local board of his original registration to the local board in whose jurisdiction he works and for subsequent transfer with each change in the location of his work.*

b. Equal Application of Draft Liability—A second difficulty with the current Selective Service System is that all health professionals are not equally liable for service. The System virtually never calls the foreign-born graduates of medical schools located in other countries, although these same physicians may be licensed to practice medicine for the civilian population in the United States. We believe that these foreign medical graduates should be considered as a part of the pool of U.S. national medical manpower and that they should be treated as equals in that pool.

To rectify the present inequality, we recommend that *the Selective Service Act be amended to provide equal draft-liability for U.S. and foreign medical graduates, provided that the foreign medical graduate has an immigrant visa and that he has not previously served in the armed services of an allied*[13] *nation.*

c. Automated Record Systems—The special nature of the health manpower draft requires that decisions about the numbers and locations of individuals to be inducted for service be made with full knowledge of the consequences of such actions to the civilian population and to the individuals chosen for service.

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[13] As defined for Selective Service purposes by the State Department.

Under the modified Selective Service System proposed in this Report, the local Selective Service board will still be faced with the task of selecting among health professionals under their jurisdiction. These local boards would be better able to discharge their duties if they were provided with information concerning the distribution and utilization of health professionals in their communities and in other areas of their state. Furthermore, if jurisdiction over health professionals is allowed to remain in the board of original registration, local boards will need information on health professionals throughout the nation since they will be choosing among persons all over the country. The present system provides no source of this information, and no individual board is likely to be able to secure it by itself.

To promote the better performance of local Selective Service boards, we recommend that *the Federal Government establish a national computer file of draft-eligible health professionals.*

d. The Question of Substitution—Under the present Selective Service System, no health professionals are actually drafted in the technical sense. The draft-eligible health professional is notified by the Selective Service System that he is to appear for induction into the armed services. If he volunteers for an officer's commission in the period before the induction date, he is then exempt from the regular induction procedures. Although virtually all of the health professionals used by the armed services are volunteers, it is apparent that "volunteer" has a rather special meaning in this case.

The draft-eligible professional has one alternative to military duty; he can apply for a commission in the Corps of the U.S. Public Health Service, and this duty substitutes for his military obligation. Through this procedure, the Federal Government obtains health manpower to provide care to merchant seamen, coast guardsmen, Public Health Service beneficiaries, Federal prisoners, and Indians still residing on reservations. Some of these officers are used in the research programs of the National Institutes of Health, while others participate in the various domestic programs of the Public Health Service. More recently, some have been loaned to work in the Food and Drug Administration, the Peace Corps, and the Office of Economic Opportunity.[14]

While these programs are necessary and desirable, their worth does not by itself justify compulsion to staff them. The purpose of the Selective Service

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[14] Although this last group of assignments will be phased out under the terms of the recently passed draft law, PHS physicians will still perform many duties not closely related to national defense.

System is to provide manpower for the defense of the Nation. The services and programs staffed by Public Health Service officers do not fall into that category, necessary as they undoubtedly are, and we believe that every effort should be undertaken to find alternative means of procuring the health manpower required for these functions.

Further, we do not believe there should be an alternative to military service for health professionals while such options are denied to other draft-eligible men. Until national policies are changed to allow substitute service for all those who are draft-eligible, this choice should not be available to health professionals.

Accordingly, we recommend that *service with the U.S. Public Health Service be phased out as a substitute for the military obligation of health professionals.**

e. Military Use of Health Manpower—The use of compulsion to recruit manpower for nondefense tasks is no more acceptable in the military services than anywhere else, and the fact that a job is in a military service does not necessarily mean that it is essential for national security. The ease of recruitment through the draft has permitted the military services an unlimited supply of health manpower, and we believe that there has been inadequate control over the purposes for which these men have been used and over the efficiency of their use, even where clearly defense-related.

Where fighting men are involved, or where their dependents are living in foreign lands, nothing should be spared to assure them the best that medicine can offer. But large numbers of health personnel are used by the armed services for other purposes. Approximately one-third of the bed days in military hospitals in the United States are taken by the dependents of military personnel and by retired military personnel. Fifty percent of the outpatient services provided by uniformed physicians in the United States go to dependents and retired beneficiaries. In short, a large number of health professionals are being procured through Selective Service procedures to provide medical services to military dependents and retired personnel who are residing in this country. Every effort should be made to obtain the necessary health manpower for these services through procedures other than the involuntary Selective Service mechanism now used.

Under the Military Medical Care Amendments of 1965, the dependents of military personnel and retired military personnel became eligible in January 1967 to use community health resources at government expense if they so choose.[15] We applaud this as a first step and hope that the Department of Defense will undertake vigorous efforts to encourage the use of community health facilities by dependents and retired personnel, wherever feasible.

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*This recommendation is emotional. There is no limitation on draft-eligible medical manpower for our fighting men. Inducement for competent doctors to work in the public interest is necessary and desirable. The proposal puts an unnecessary burden on the public, our seamen, and others. The recommendation does not suggest any advantage for either military or civilian groups, and it most certainly does not assist in easing any manpower shortage.—J. A. Beirne.

At the same time, we are not wholly sanguine about placing military dependents and retired personnel into the inadequate system of medical care to which most of this Report is directed. Government provision of such care, rather than simple financing of it, might prove no more expensive to the Government and, what is more important, it could provide an opportunity for experimentation with new and improved methods of care. For this reason, the armed services should look toward the greater recruitment of health manpower through voluntary procedures, particularly when that manpower is to be used in medical facilities located in the United States.

To minimize the use of Selective Service procurement, we recommend that *the Department of Defense be instructed to encourage the greater use of the Military Medical Care Amendments of 1965 and to study the feasibility of utilizing voluntarily obtained health professionals in military facilities located in the United States.*

B. Conserving Resources

The Nation can never afford to waste health resources. Yet current methods of providing and paying for health care seem almost designed to foster inefficiency. Insurance coverage is directed primarily at expenses incurred by patients while they are in the hospital, thus encouraging patients and their doctors to choose hospitalization when less costly outpatient facilities or services would be equally satisfactory from a medical standpoint. Health professionals are generally paid in proportion to the amount of services they render, and therefore have no economic incentive to avoid providing unnecessary care. The nature of hospital-governing structures usually makes any effective control over hospital costs very difficult, and reimbursement of hospitals on the basis of costs places no penalty upon wasteful operation.

If the needs for health care are to be met, the health care system must be organized to employ its resources with more wisdom and effectiveness. The two areas which appear to offer the greatest potential for improvement are (1) reducing unnecessary (or unnecessarily expensive) medical care and (2) increasing efficiency in the provision of hospital care. In our recommendations to bring about improvement in these two areas, we place heavy emphasis upon economic rewards for those who demonstrate superior ability to utilize resources efficiently.

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[15] Reimbursement is based on a formula almost identical to Medicare.

We recognize that rewards for economy alone can lead to decreased quality rather than to increased efficiency, and we raise the issue immediately because it is so often used as an argument against attempts to improve efficiency in the medical field. We believe that the solution lies not in avoiding incentives for efficiency but rather in coupling such incentives with rewards for improved quality. Then, insofar as people are guided by monetary considerations, they will try to raise the quality of care with the same vigor as they seek to increase efficiency.

1. Improving Hospital Efficiency

a. Potential Savings—The variations in costs of operation among hospitals appear to be far greater than can reasonably be accounted for by such factors as differences in wage rates or the scope and quality of services provided.

For example, recent data show that among 22 voluntary short-term teaching hospitals in New York City, average per diem costs in 1965 ranged from a low of about $50 to a high of $87. The corresponding range among 42 voluntary community hospitals in New York City was $34 to $61. An even wider range existed among 51 voluntary hospitals outside of New York City.[16]

We also analyzed data collected by Hospital Administrative Services (a service of the American Hospital Association) for per diem costs in a carefully chosen set of "distinguished" hospitals. All of the hospitals are recognized as providing outstanding care, with the scope of service and teaching and the quality of staff considered to be essentially equivalent. Among the 12 hospitals considered, wage-adjusted costs per patient day ranged from $46 to $96. The wide variations were not confined to total cost, but appeared in every aspect of hospital operations—dietary, housekeeping, nursing, administration, etc.[17]

It is not surprising that there are wide variations in efficiency among hospitals, given the almost total absence of economic incentives for efficiency or mechanisms that would force the inefficient to improve or go out of business. At the same time, the magnitude of the potential savings appears impressive. If the average cost in general hospitals could be brought down by only 10 percent, the savings would presently total almost $1 billion per year, and by 1975, they would total $3 billion annually.

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[16] See Appendix II, Volume II, for detailed figures.

[17] See Appendix III, Volume II, for details of this analysis.

Even larger long-run benefits should result if meaningful incentives were introduced. Projections based on current trends indicate that average hospital costs per patient-day will increase by approximately 9 percent a year between 1965 and 1975—reaching $100 a day by 1975. If cost-saving innovations, introduction of modern management techniques, and technological change encouraged by properly designed incentives could reduce the annual rate of increase by 2 percentage points, it would result in an annual saving of $5 billion by 1975. The potential savings from incentives justify a major effort to introduce them. The real question, then, is how.

b. Improving Hospital Payments—Meaningful incentives could create strong pressures for innovation, improved quality, efficient scale and management of operations, and provision of an economically sound range of services within hospitals. A fundamental difficulty is the lack of knowledgeable and discriminating consumers to assure that the incentives lead to higher efficiency without deterioration of quality. The endless varieties of medical treatments and the highly specialized knowledge required to understand them make it impossible for the individual consumer to determine a fair price for care which he receives. A lower price may not mean better value but inferior care; and a higher price may mean unnecessary and less efficiently provided care, rather than better care. The fact that consumers are not knowledgeable, coupled with the difficulty of obtaining uniform success in patient care, lead to the conclusion that the usual market mechanisms are unable to reward excellence and to penalize inferiority in health care.

If effective incentives are to be introduced into the hospital field, the knowledge required to determine fair value must be supplied by experts. The wide variation in what constitutes appropriate treatment from patient to patient makes the evaluation of each case by experts prohibitively expensive; but in hospitals, where a large number of cases can be considered as a group and paid for on this basis, the problems of expert evaluation are reduced to manageable proportions. Although appropriate treatment may vary widely from patient to patient (even after placing them in reasonable categories), the *average* variation will be reduced when a large number of cases are considered together. By applying expert evaluation to representative samples, it should be possible to make reasonable inferences about the standards of overall care provided to the total group. We believe, therefore, that health insurance organizations should be able to gain the ability to structure payments so that hospitals will have a meaningful incentive for more efficient operation without compromising the quality of care. We recommend that *the Federal Government and health insurance organizations take immediate steps to introduce new formulas of payment on a highly selective but broad experimental basis. The payments should* *provide rewards for efficiency and high-quality care, and they should provide better hospitals with a basis for obtaining funds to expand their scope of operation.*

Our recommendation for immediate operational experimentation is based on two strongly held beliefs: (1) improved, workable payment systems can be developed only through actual experience, and (2) the present methods of payment are so deficient that great improvement is possible without the attainment of perfection. *No amount of research, model evaluation, or simulation will provide the necessary information to design the optimum arrangements. This information can be gained only through experience.* Some experiments may not be entirely successful; but if reasonable prudence is exercised, the benefits from trial and error will far outweigh any disadvantages. We emphasize, however, that the effectiveness of new payment methods should be evaluated by comparing them with existing methods, rather than with a theoretical ideal. New payment methods will undoubtedly have defects, but present methods are far from perfect.

Although we recognize that the introduction of incentives involves very complex factors and will require much additional study by experts, *we believe that the following principles should be observed in the development of new payment methods:*

1. *The reward for increased quality must be sufficient to make it unprofitable for a hospital to reduce quality and community service in order to lower costs.* A fundamental characteristic of a system of payments that provides incentives for efficiency is that the level of net income must depend upon the hospital's ability to control costs. The obvious danger is that costs may be "controlled" by lowering the quality or limiting the extent of service instead of increasing the efficiency of the total operation. In order to avoid this, the quality of care must be evaluated and hospitals that provide a higher quailty of service must receive higher payments.

Peer review groups (discussed earlier in the context of physician accountability) could serve as the core of an evaluation mechanism. However, they should not merely decide whether a hospital's standards of care are satisfactory or unsatisfactory, since the "satisfactory" category would necessarily be so broad that it would allow deterioration of service without penalty. To provide adequate safeguards against quality loss, it will be necessary to have a number of categories of "satisfactory" care. Initially, evaluations will have to rely heavily on expert judgment. The objective of broad-scale experimentation should be to develop an evaluation system which will combine this expert judgment with objective standards. The more weight that can be given to objective standards, the better; and vigorous efforts should be made to devise them.

As the standards of care in a hospital improve, the level of payment should rise by more than enough to compensate for the reasonable cost of improvement.[18] If the payment system is structured in this manner, it will provide incentives for increased quality as well as for increased efficiency.

2. *The guiding, theoretical principle should be the payment of equal amounts to all hospitals in a locality for an equal quantity and quality of service.* If this theoretical ideal were approached, the net income of hospitals providing equal service at a low cost would exceed that of high-cost hospitals which would have a smaller net income or might not have any at all. Moreover, if the payment system provides increasing net income as the standards of care increase, hospitals providing the best care would have the largest net income. High-cost hospitals and hospitals providing poor care would have a small net income or a loss; in some cases, they might even be forced to charge patients additional fees beyond those received from health insurance payments in order to cover their operating expenses. Strong pressures would then exist for such hospitals to improve their standards of care and to reduce their operating expenses. *Because of the differential flow of funds among hospitals, those which are the most efficient and of the highest quality would prosper and expand in the long run, while the poorest and least desirable hospitals would become a diminishing portion of the total hospital sector.*

The Panel on Hospital Care has spelled out the details of several approaches to the introduction of incentives into hospital payments. A common element of all the schemes is systematic monitoring and evaluation of the quality of care provided. The quality evaluation would be used to place each hospital in one of a limited number of categories reflecting its standard of care. Basic payments to hospitals would be scaled upward from category to category by more than enough to compensate for the reasonable cost of improving the quality of care. The incentives for improved quality would then be incorporated into a variety of payment methods that would provide additional incentives for increased efficiency of operation.

Implementation of this theoretical model would be difficult and undoubtedly would involve a series of successively closer approximations. In addition, all of the circumstances surrounding medical care will continue to change, and any system of hospital payment should have built-in mechanisms to assess these changes and alter the payment scheme accordingly.

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[18] There will always be difficult decisions to make in cases where improvements of small medical value are disproportionately costly. It will be hard to preserve the concept of incentives for quality and yet prevent excessive rewards for "gold plating" improvements which are not medical necessities. We have no easy solutions, but we would note that all "gold plating" is allowed under current cost-plus payments.

We have explored various mechanisms by which the overall principles of incentive payments to hospitals could be implemented. Our limitations of time and expertise have not permitted a definitive choice among the various alternatives, but we offer the following three approaches as examples of the wide range of possibilities rather than proposed solutions.

One approach would be to accept the existing level of costs in each institution in the base year, and then to reward each hospital in proportion to its success in holding down cost increases in subsequent years. This approach has the strength of simplicity of implementation and makes the hospital compete against its own past performance rather than against an "ideal" institution. Its major deficiency is the favored position of hospitals that have unjustifiably high costs at the time the incentive payments begin, since such hospitals have more room to curtail their rate of increase in costs than the already efficient ones. However, since there is no reason to believe that differences in hospital costs result from the "padding" of accounts, improvements in management of such high cost institutions are likely to be difficult and, therefore, will be deserving of reward.

Another approach could be to use a point rating system to classify hospitals in a locality into groups rendering equivalent ranges of services. The number of points given for each specific service would reflect the cost of providing that service, so that hospitals could not move to a higher group by adding a mix of minor services. The basic payment to hospitals with a similar point rating would be equal to the average cost of care (per day or per case) within the group. To this basic payment would be added a percentage bonus that would vary with the individual hospital's standard of care as determined by the peer evaluation groups. Payments made under this system should conform to the principle of equal payment for equal service. The major difficulty in implementation would be the development of an equitable and acceptable point rating system.

A third approach would be to choose a small number of well-defined services or treatments. Those chosen should be well enough defined so that there would be reasonable assurance of meeting the criterion of equal payment for equal service, e.g., certain laboratory or radiology procedures, or the treatment of specified orthopedic or surgical cases. Careful studies would be made to determine the reasonable cost of providing each service. Evaluation would be made of the quality of each service in the participating hospitals. For each one, all hospitals in a locality would receive an equal base payment plus an increment that varied with the standard of service. The advantage of this last approach is that the incentive payments would be applied only when there was confidence that they would appropriately reward hospitals on the basis of actual performance. Its disadvantages are the probable difficulty of developing the necessary methodology and the resulting slow pace of implementation.

Each of the illustrative payment approaches includes appropriate rewards for improving the quality of care. Not all of them conform closely to the principle of equal payment for equal service, but that is not necessary in order to result in substantial benefits. Although the size of the rewards received by hospitals may not accurately reflect their actual performance in controlling costs, strong incentives for efficiency and higher standards of care would still be provided. It is neither possible nor important to settle on the details of a payment system at this time, but it is important to urge acceptance of the basic principle of incentives for efficiency and for higher standards of care, and to begin to experiment broadly with them.

c. Improving Hospital Facilities—Most reimbursement formulas are not intended to provide hospitals with sufficient capital funds to meet their needs for modernization and expansion. The hospitals therefore continue to seek additional funds from philanthropic organizations, various government agencies, and commercial lenders. In their allocation of available funds, hospitals have generally given priority to the expansion of facilities and the improvement of medical services. Because hospitals (particularly those in urban areas) have been unable to obtain sufficient funds to meet all of their needs, their modernization programs and cost-saving investments that would conserve manpower have been repeatedly deferred. As a consequence, many of our major hospitals continue to use obsolete facilities which are incompatible with the provision of high-quality hospital care at low cost.

The scarcity of capital funds for improving hospital operations is a major factor in the present wasteful use of health manpower. Because labor costs are 60-70 percent of hospital operating expenses, there is great potential for conserving resources by upgrading facilities through capital investments. A number of important points should be carefully considered in formulating programs to attain this goal.

(i) **Incentives**—If hospitals are to improve operations, they must have not only more funds but also incentives to use the funds to increase efficiency rather than simply to expand capacity and extend medical services. For this reason, *steps to increase the availability of capital in the hospital sector should be coupled with the introduction of incentives into the payment system.* Moreover, incentive payments automatically would provide the most capital funds to those hospitals that have demonstrated the most efficient and highest quality operation. The more successful hospitals (in terms of quality and cost) will have a large net income, and those providing poor care at high cost will receive a small and possibly negative net income.

The amount by which payments to the hospitals should exceed average cost is a matter which will require extensive study. The margin should be sufficiently large so that for the better hospitals, net income, commercial borrowing made possible by the anticipated future net income, and depreciation funds will be adequate to meet most of the needs for expansion and upgrading of hospital services.

We have tied the mechanism for providing capital funds to our proposed incentive plan which operates through hospital reimbursement. In this way, the selection of hospitals to receive capital funds will be based on their relative efficiency. However, the criteria for determining how much capital should be provided to a locality need not be based on, or even related to, a percentage of the total costs of hospital operation. Other factors, such as absolute need for plant renewal, population growth, and the role of the hospital in the community, will undoubtedly be part of the capital payment formula which remains to be developed.

(ii) **Modernization Programs**—Although net income (including incentive payments), depreciation funds, and commercial borrowing should become the principal means for providing funds for hospital modernization, Federal grant and loan programs will be required to meet the extraordinary needs of some large urban centers where complete overhaul of hospital facilities is needed. In these areas, the plants are so obsolete that there is no possibility of operating them efficiently enough to obtain the capital funds required for modernization or replacement. We therefore recommend that *Federal assistance in the form of grants and loans (or loan guarantees) be provided to obsolete hospitals in those areas where modernization needs are so extensive that nongovernment sources of capital funds will be clearly insufficient.*

Before a major modernization program is undertaken, careful consideration should be given to the merits of replacement versus modernization. In most cases, the costs of replacement are essentially the same as those for modernization. Replacement, however, would allow design innovations, labor-saving organization, and relocation or merger of facilities where appropriate. Even where the cost of replacement is much higher than the cost of modernization, these advantages will sometimes more than justify the additional expenditures. Therefore, we recommend that *before any decision is made to finance modernization on a large scale, state and Federal governments should carry out a careful study to determine criteria for deciding between modernization and replacement.*

(iii) **Design of Facilities**—To build facilities that are able to take full advantage of the great changes which have occurred in the technology of communications, transportation, and medical care itself will require greatly improved designs. Individual institutions cannot afford the research and development necessary to obtain such improvements, and no single segment of the hospital supply industry has a large enough interest to warrant an adequate investment in a design effort. Therefore, we recommend that *the Federal Government provide major support for research and development of improved hospital facilities.*

One important objective of the effort to develop new hospital designs should be to avoid the obsolescence that has beset our present hospitals. Future advances in hospital technology and medical practice can be expected to occur at least as rapidly as in the past; when new designs are planned, these changes should be anticipated. Consideration should be given both to structures that permit internal rearrangement of spaces and utilities in response to changing operational requirements, and to facilities with a short life and costs low enough to permit frequent replacement before obsolescence.

d. Improving Hospital Organization and Management—Improved design and increased capital are worth little without effective management. In most hospitals today, managerial leverage and the control of decision-making rest in large measure with the physicians who use the hospital, but who have neither a direct financial stake in its success nor the ultimate responsibility for the service it provides. These responsibilities belong to the boards of trustees (or equivalent control groups), but too frequently they view their board activities as a general community service and have little knowledge or chance to influence day-to-day operations. These operations, in turn, are handled by hospital administrators, whose relationship to the medical staff is generally difficult and subordinate. Because limited authority has been accompanied by low wages and low esteem, it has been hard to recruit or retain excellent administrators except in certain large or university-affiliated hospitals.

We are concerned that this cycle tends to perpetuate itself, and that it will not improve unless there is a radical change in the relationship between the boards, the administrators, the medical staffs, and the communities they serve.

Simply put, the boards' members need to discharge the obligation they accepted along with their prestigious membership. The Darling Case[10] has now set legal precedent that the institutional responsibility of boards of control may be extended to practice conducted in their hospital by independent physicians, exercising hospital privileges granted by the board. In order to fulfill their responsibilities, board members need to become familiar with hospital operations generally and intimately knowledgeable about their own institutions. We believe that investment in educating board members would more than repay itself through the efficiencies they could help to introduce into hospital operations. Accordingly, we recommend that *health insurance organizations, private foundations, and hospitals, with assistance from the Federal Government where needed, should underwrite educational programs for members of hospital boards of control. These programs should make the board members familiar with hospital operations in general and intimately knowledgeable about the comparative performance of their own institutions. Concomitantly, these programs should offer advice and assistance for cost reduction and quality improvement.*

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[10] See Darling v. Charleston Community Memorial Hospital, 33 Ill. 2d 326, 211 N. E. 2d 253 (1965).

Another step toward improving hospital boards would be to broaden their membership to include consumer representatives from the community they serve. While all board members are, as individuals, consumers, they more frequently represent organizations whose interest in the hospital has been providing capital funds rather than paying for services. Capital expenditures are small relative to operating costs (18 months of operating expenses in a new hospital typically equal the total cost of construction). If board members include consumer representatives who are involved with paying for services, the boards may show greater concern about the larger elements of hospital costs.

The administrators present a more difficult problem, since they remain caught between the boards and the physicians. Higher salaries competitive with industry and more responsibility will undoubtedly attract better administrators, including graduates of business and public administration schools in addition to university programs of hospital administration. Furthermore, well-paid administrators not only could work more effectively with physicians, but the high cost of their salaries would influence the hospital boards to assure that the administrators' responsibilities were not limited to inconsequential tasks.

The final element of management—the physician—is the central figure in the hospital. He makes the initial decision to admit a patient, and his decisions control the vast majority of costs incurred during hospitalization. Moreover, his is the dominant voice in hospital policy in all areas that touch upon medical care. Although physicians are subordinates in the formal organization of the hospital, they are the leaders in the informal organization that controls most hospital decisions. How to give physicians responsibility commensurate with their authority is a problem. Presently, most physicians feel little responsibility to a hospital because they pay nothing for its use; neither do they suffer any direct consequences when the hospital gets into financial trouble. As a result, they generally favor investing funds in new medical equipment or services rather than improving management or installing labor-saving devices.

To improve the role of the physician in the management of hospitals we recommend that *medical and hospital associations should jointly explore means to increase the physician's responsibility for the successful and economical management of hospital operations. These explorations should include consideration of providing physicians with a financial stake in the operation of the hospital, and of including physicians in the membership of hospital boards of control.*

Two changes in the physician's relation to the hospital could improve the situation. First, physicians could be given financial incentives to improve the efficiency of hospital operations. This might be accomplished by giving a selected group of physicians in a hospital responsibility for controlling operations relating to medical care. In return for their services, they would receive payment in proportion to their success in reducing or controlling costs. Another group of physicians, in conjunction with the hospital board of control, could set and enforce standards relating to the quality of care, in order to assure that efforts to increase efficiency would not result in deterioration of quality. There could be a beneficial interaction between this suggested approach to hospital management and the incentive payment system that we have proposed.

We are aware that the history of quality controls in proprietary hospitals owned by physicians has not been satisfactory, and that permitting physicians to benefit financially from the efficient operation of community, nonprofit hospitals may appear contrary to all past experience. Nevertheless, the actions of physicians present the greatest opportunity for improvement as well as for abuse, and we believe that the incentives for quality and the techniques for monitoring care (which were absent in proprietary hospitals) will permit this innovation to be safely tried.

A second change would be to include physicians as members of the hospital board of control. Fear of conflict of interest has historically led to prohibitions (sometimes written into law) against giving the physician formal authority and responsibility for hospital operation. But because physicians are the crucial figures in the hospital, excluding them from hospital boards does not prevent them from exerting a dominant influence on hospital decisions. We believe there are clear advantages to making their authority explicit and combining it with the responsibilities associated with board membership.

2. Controlling Utilization

Recent concern over the rapid rise in the costs of health care has focused primarily upon increases in hospital costs and in physicians' fees. Of equal importance in raising the total bill for health care has been the rise in utilization of all health services. In the period 1955–65, physicians' fees rose by 35 percent, while the per capita quantity of physicians' services increased by 54 percent. In the same period, total expenditures for care in short-term hospitals rose by 166 percent. Price increases accounted for only slightly more than a third of this rise. The remainder of the rise was due about equally to increasing use of the hospital and increasing services provided to each patient in the hospital.[20] Controlling utilization by reducing the provision of inappropriate or unnecessary and needlessly expensive medical services can significantly slow the overall rise in health care costs and health manpower requirements.

There are three areas in which improvement should be sought:

1. Excessive utilization of hospitals either for too long a time or when not required by the patient's illness;
2. Excessive utilization of physicians' services, either inadvertently through poor practice or purposely for exploitation;
3. Unnecessary duplication of diagnostic and treatment procedures due to laboratory work of poor quality or lack of adequate information handling capabilities.

a. Hospital Utilization—The use of hospitals for too long a time, or when medically unnecessary, has arisen from a variety of factors. The prevalent limitation of health insurance coverage to those expenses incurred by a patient when he is in a hospital has encouraged the use of the hospital in situations where out-patient care would be medically just as appropriate. Conversely, the lack of insurance coverage for services outside the hospital has discouraged the construction of facilities less sophisticated than hospitals. As a consequence, few opportunities exist for diagnoses or treatment in a facility of intermediate complexity between the physician's office and the hospital. Furthermore, because the hospital has become the center for complicated diagnostic or curative procedures, there has been a tendency to consolidate other operations there primarily for the convenience of the physician. Lastly, many physicians have willingly gone along with the trend toward increased use of hospitals. Insurance coverage often guarantees them payment for services rendered in the hospital but not elsewhere, and the additional cost associated with hospitalization in no way affects their income.

To what extent have these factors inflated hospital use? An approximate answer to this question can be obtained by comparing the rates of hospital utilization under regular hospital insurance plans and under prepaid comprehensive care plans. For example, Figure 7 shows the hospital experience over the five-year period 1960–65 for Federal employees covered under a variety of health insurance plans. During that period, hospital use rates under the prepaid comprehensive care plans remained practically unchanged, while those under Blue Cross-Blue Shield and the indemnity benefit plans rose by nearly 50 percent, to a level more than twice that under the prepaid plans. Almost none of the factors that encourage excessive hospitalization exist in the plans providing comprehensive care. The patients' medical expenses are covered whether incurred inside or outside the hospital; extensive outpatient facilities are available to the physician; the physician is paid on a salary or per capita basis, so that unnecessary hospitalization does not add to his income; in fact, under some plans, unnecessary hospitalization may actually decrease his income. Not only are hospitalization rates significantly lower in prepaid comprehensive care plans but, perhaps even more important, such plans appear to have avoided the sharp rise in hospital use that has occurred with regular hospital insurance.

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[20] See Appendix I, Table 4.

A detailed analysis of comparative experience for 1961–62 indicates that variations in geographic and age distribution do not cause the differences in hospital utilization. Also, the rate of hospitalization under individual practice plans, although higher than under group practice plans, is relatively low and has remained stable over time. These plans resemble group practice plans in that they provide insurance coverage for a broad range of outpatient services. They differ primarily in that they are voluntary arrangements under which independently practicing physicians provide comprehensive care within agreed fee limits. Although extensive clinic facilities are not available to them, coverage for outpatient as well as inpatient care is provided primarily by the insurance carrier.

A detailed study of one prepaid group practice arrangement, the Kaiser Foundation Health Plan, was made by a group of the Commission staff.[21] Under this plan, comprehensive health care is provided on a prepaid basis to more than 1.5 million subscribers, the majority of whom live in California. After adjustments were made for age differences, Kaiser subscribers in California were found to have hospital use rates more than 30 percent below the state average. Moreover, the state average includes the 25 percent of the population that has no hospital insurance coverage, and hence no incentive to make excessive use of hospital services.

Kaiser has also been able to control utilization better over a period of time. Between 1960 and 1965, hospital patient days of Kaiser subscribers declined by 12 percent, while those for the United States as a whole increased by 9 percent. Primarily on this account the Kaiser plan was able to hold

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[21] For entire report, see Appendix IV, Volume II.

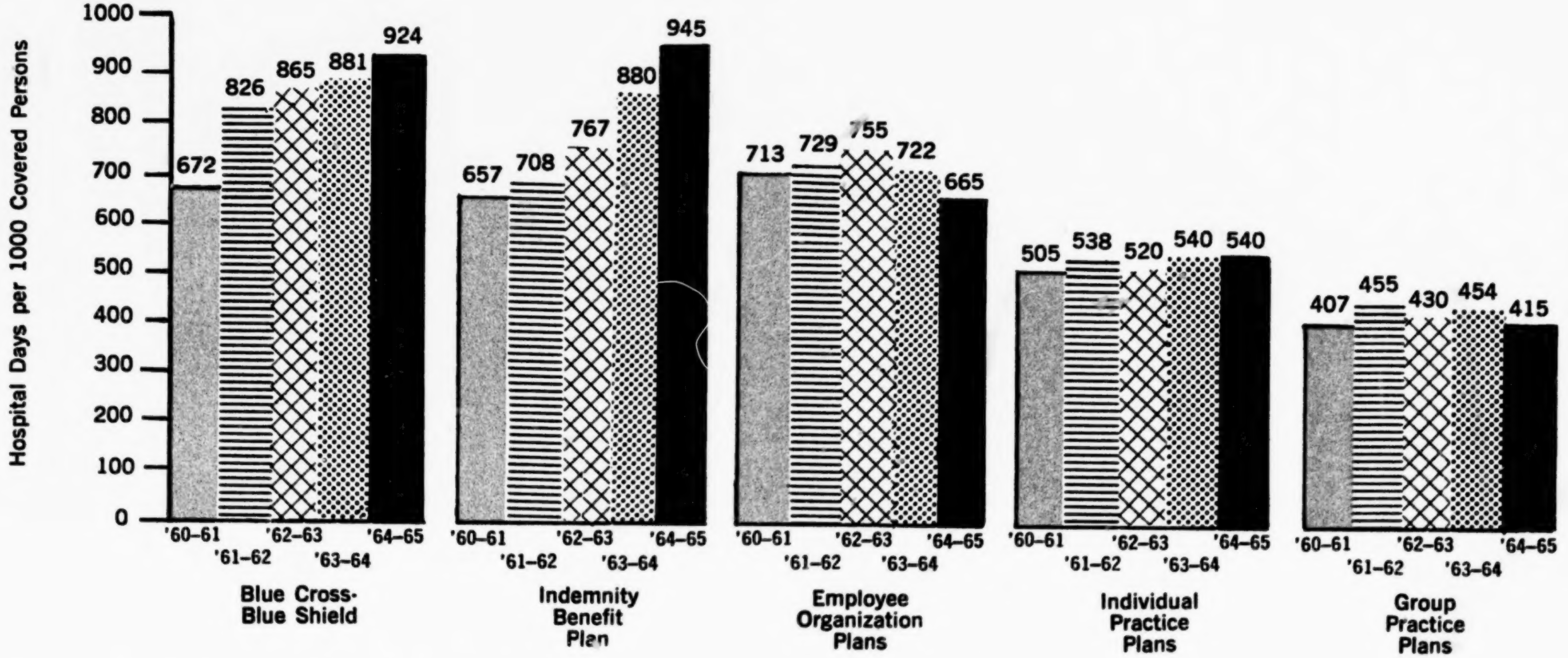

FIGURE 7.—Federal Employee Health Program Experience for the Contract Years Comparing Non-maternity In-Hospital Utilization Rates by Plan, Both Options

Source: G. Perrott and J. Chase, "The Federal Employees Health Benefits Program," *Group Health & Welfare News—Special Supplement,* May 1967.

the rise in its expenditures for hospital care during this period to 15 percent compared with a 50 percent increase for the United States.

The lower hospital use rates of Kaiser members did not result in higher outpatient medical costs. In fact, the cost of physician services to Kaiser members was appreciably lower than the state average. The staff study group concluded that the average Kaiser member obtains high quality medical care for 20–30 percent less than the cost of comparable care obtained outside the Plan. The study group also concluded that the majority of savings achieved by Kaiser result primarily from effective control over the nature of medical care that is provided and over the place where care is given.

The data cited above suggest that the potential savings from better control over hospital utilization are immense. A 25 percent reduction in current hospital use would reduce the country's general hospital bill by $2.5 billion yearly, and the savings would grow to an annual rate of $7.5 billion by 1975. Perhaps even more important, such a reduction would eliminate the hospital nursing shortage. Although some of these inpatient hospital savings would be offset by increases in the cost of outpatient treatments, it seems likely that the offset would be only a minor fraction of the savings. Accordingly, we make the following five recommendations:

Health insurance organizations should develop workable plans to provide coverage of outpatient as well as inpatient health services.

The experience of the Federal employees indicates that comprehensiveness of coverage is a major factor in reducing hospital utilization. We believe, however, that safeguards are required to assure that the extended coverage does not encourage such a large rise in outpatient care that the hospital savings are nullified. Peer review groups appear to have the potential for providing such a safeguard, and their application to this problem is discussed at a later point.

Medicare and Medicaid payments to organizations providing prepaid comprehensive care should be changed from a cost reimbursement basis to one which will permit these organizations to share in the savings they achieve by effective control of utilization.

For example, Medicare and Medicaid might calculate their "normal costs" of providing benefits to persons receiving care from fee-for-service purveyors. Prepaid comprehensive care plans could then be paid their cost of providing equal coverage to similar persons plus a percentage of the differences between their cost and the "normal cost". Alternatively, the comprehensive care plans could be paid some percentage of the "normal cost".

*The Federal Government should underwrite a variety of experiments aimed at reducing utilization. As successful methods of controlling utilization are developed, Medicare and Medicaid should share the savings on the same basis used for prepaid comprehensive care plans.**

All health insurance organizations should be encouraged to revise their payment methods to share savings with health care purveyors that demonstrate better control over utilization.

Peer review should be widely applied to hospital utilization. The study of the Kaiser Health Plan indicated that an important factor in its ability to control utilization is peer review and supervision of physician activity. If, as seems predictable, a small minority of physicians account for a majority of the inappropriate use of hospital facilities, the cost of peer review required to detect and eliminate this practice should be only a minor fraction of the savings that would be achieved.

As we noted earlier, special facilities are needed to allow physicians to perform sophisticated diagnoses and treatment on an ambulatory basis. We have made no recommendations directed to this need because we believe that our other recommendations, if implemented, will generate enough demand to bring such facilities into existence.

It is appropriate at this point to comment on one widely endorsed means of controlling utilization: area-wide planning to control the construction of health facilities so that they meet the projected needs of the communities they are intended to serve without duplication or gaps in coverage. One of the motivations for establishing planning agencies has been the belief that overexpansion of hospital capacity leads to overutilization. Although there is considerable evidence to support this belief, we are skeptical of the value of giving planning agencies the authority and responsibility to approve or disapprove individual hospital projects.

First, there is a long history of regulatory agencies becoming defenders of the status quo, rather than promoters of innovation and change. Innovation is badly needed in the health industry, and any additional obstacles to change must be avoided. Second, we doubt that all planning councils will have sufficient objectivity and wisdom to make decisions always in the best interests of the entire community, rather than in the interests of special groups. Third, we question a policy that prevents private groups from building or expanding a hospital for which they are willing to donate their own funds—and many hospitals have the initiative and capacity to finance expansion without recourse to government assistance.

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*The overwhelming evidence produced by the panel study of the Kaiser operation as well as the discussion of the members of the Health Manpower Commission suggest the properness of recommending favorably the extension of comprehensive prepaid group health care plans.

In addition, the discussions and study of the Health Insurance Plan of Greater New York as well as the three years of experience of the Federal Health Benefit Program show quite clearly the compelling evidence supporting the view that group practice plans bring about the most economical delivery of medical services. The Commission should take a forthright stand in support of group practice plans.—J. A. Beirne.

For these reasons, we believe that major reliance for controlling utilization should be placed on the actions set forth in our recommendations, rather than on regional planning authorities. Use of the incentive payment system to regulate the allocation of capital funds does not eliminate the need for value judgments and political decisions. But these will be exercised in full measure in deciding on criteria for setting the level of capital payments, rather than by passing judgment on the "worth" of proposed capital projects of individual hospitals.

Although we are skeptical of councils with franchising authority, we also recognize that our recommendations may not be any more effective in correcting the inefficient utilization patterns which now exist. Therefore, these new incentive plans, if implemented, will have to be carefully monitored and modifications made where beneficial change is not forthcoming.

Aside from control over hospital construction, however, planning agencies can make a valuable contribution by acting as the focus for voluntary community planning to improve health services, and by collecting, analyzing, and distributing information concerning the need for medical care facilities. Moreover, planning at the state and regional level is essential to provide the most effective use of Federal and state funds in the wide variety of health care programs that are currently being sponsored. Thus, with the caveat that planning agencies should not be given franchising authority, we recommend that *the Federal Government should continue support of planning agencies at regional, state, and local levels to collect, analyze, and distribute information regarding the need for medical care facilities.*

b. Physicians' Services—Physicians' services (that is, those services provided under the direction of a physician and for which he sends a bill) are of almost the same importance in the health budget as general hospital care. Both are growing at approximately the same rapid rate. Control over utilization is therefore as important in the area of physicians' services as it is in hospital use.

The practice of providing unnecessary or overly expensive tests and treatments reflects ultimately on the ability or ethics of the physician involved. It seems likely that—given the high standards of training and conduct in the medical profession—only a small number of physicians are involved in providing such services. We believe, however, that a peer review, carried out in conjunction with health insurance organizations, could reduce these abuses significantly. This review could be similar to the one being developed and used by California Blue Shield (described previously in Section A. 1, Quality of Care). We therefore wish to re-emphasize the importance of our previous recommendations that *mechanisms should be established to provide peer review—on a routine basis—of the appropriateness and proficiency of physicians' practice.*

c. Needless Duplication—Medical treatment often involves unnecessary duplication of effort because of unreliable laboratory tests or inadequate communication of information. When a patient is referred from one physician to another, for example, tests and procedures may be repeated because the second physician is uncertain about the previous tests or because he is entirely unaware that they were made.

Earlier in the Report, we noted the inaccuracy of much routine laboratory work. Our recommendation that medical laboratories be licensed on the basis of the accuracy of their work would greatly improve the reliability of laboratory testing. Increased reliability would, in turn, eliminate one of the needs for repetitive testing.

A more serious problem is the faliure to transmit prior medical information when a patient is transferred from one physician to another. This not only necessitates duplicate testing, but often deprives the new physician of information that may be crucial to reaching the proper diagnosis. The extent of the deficiencies in information transferral is indicated by a study of referrals to a university hospital.[22] In only 40 percent of the cases did the referring physicians provide any medical information on the patients.

The Panel on New Technologies studied in detail the problem of improving access to prior medical information on patients. It concluded that current technologies in data processing and communications are sufficiently advanced so that centralized banks of patient data might be established. These banks would accumulate individual medical records and make them promptly accessible to authorized physicians at the point of care. The records would be more complete and more readily available than any that have ever been possible. The banks could also provide cumulative data on virtually the entire population and thus facilitate epidemiologic studies of disease with an accuracy and scope heretofore unattainable.

We are well aware that the confidential nature of the physician-patient relationship poses special problems in the establishment of medical information systems. The problems of safeguarding information here, however, are less difficult than those in computerized systems dealing with highly classified areas of national security and intelligence. Experience in these areas has demonstrated repeatedly that coding and the limited access capabilities of automated systems can provide far better security than that afforded by a hospital record library or a doctor's office files.

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[22] T. F. Williams, et al. "The Referral Process in Medical Care and the University Clinic's Role", *Journal of Medical Education,* Volume 36, August 1961.

In order to hasten the development of improved patient records systems, we recommend that *the Federal Government consider establishing on an experimental basis a central patient data bank for Federally operated hospitals whose patient load characteristics approximate those of the general population.*

C. Improving the Organizational Framework

Many of the serious problems discussed in this Report arise from the lack of an organizational framework for the multitude of disparate elements which provide medical care. Close cooperation and coordination among them is rare, and duplication of effort and actual conflict are all too common. Unfortunately, consumers of health care are unable to make the informed judgments required to assure an effectively operating market, and the sense of responsibility of most health professionals takes the form of concern for the individual patient rather than for society as a whole. As a result, there is limited effort to assure that resources are effectively coordinated and applied where they will be most useful.

In spite of the great complexity of modern medical care, independent practitioners and institutions continue to dominate the system. Individual practice has survived in medicine because it has features which are attractive both to the physician and to the public. We appreciate the advantages of independence but we are concerned about some of its associated disadvantages. Inadequate communication, coordination, and control links among practitioners and institutions contribute to gaps in quality and distribution, as well as to the inflation of medical costs.

A particularly difficult and important problem is the inability of individuals to find entry points into the health care system. Despite the fact that in our Commission discussions we have devoted a considerable amount of time to the problem of access, we are not able to suggest a clear solution. Many of our recommendations will improve access by effectively increasing the time which physicians can devote to their key role in this task. Also, communities might be encouraged to place on a community health organization, or even on a single ombudsman-like individual, the responsibility for assuring access. Whatever solutions are ultimately devised, the greatly increased support now provided for comprehensive health planning should be used to hasten their development. Accordingly, we recommend that *the highest priority should be* *given by community health councils to developing methods which will assure access to adequate health care for all those in the community they serve.*

Two approaches might be used to overcome the detrimental effects associated with the independence of practitioners and institutions. One is to improve the informal links between the two groups without affecting their basic independence of each other. Thus, our recommendations for changes in the payments for care are aimed at using the rewards and penalties of an effective marketplace to encourage the coordination of resources. Similarly, our recommendations to establish peer review groups and to improve medical records and communications by exploiting current technology are designed to improve the linkages among the various components of the medical care system.

Another approach is to bring the two groups together within formal organizations. The extreme application of this approach would be a national health service. However, we feel strongly that the disadvantages of this degree of organization would far outweigh the advantages.

Much room exists, however, for beneficial expansion and modification of the formal organizations that now exist. For example, hospitals represent the most common formal institution for medical care, but a majority of physicians conduct their practices independently of the hospital organization. One way of improving the links among physicians would be to have them become more involved in an expanded hospital organization. To a large extent, this has already taken place in the university-affiliated medical centers. Also, increasing numbers of community hospitals have full-time staff members and provide outpatient services; thus, they frequently evolve toward comprehensive medical care units.

Group practice which provides comprehensive care is another type of formal organization. It has the potential (not always fulfilled) to realize many of the benefits that can flow from proper management and coordination of medical care resources. It can provide convenient access to care, appropriate utilization of the skills of specialists, effective peer review, and efficient administrative and managerial support. It can furnish a setting which lessens the difficulties of providing adequate care to indigents. And, because physicians receive their incomes from the organization rather than directly from individual patients, the group can structure payments to physicians so that they provide them with strong incentives for making appropriate use of facilities and practicing medicine of high quality.

It is highly unlikely that the innovation and experimentation necessary to develop either of the two approaches outlined above will occur unless fundamental changes are made in the system of payment for medical care. An effective way to encourage health professionals to try new methods of organizing their work is to allow them to share in the savings that improved organization can achieve. We hope that the changes in the payment system and in professional review which we have recommended will encourage hospitals and other formal organizations to play a wider and more constructive role in the management of health care resources. We expect that the market forces generated by the recommended changes will lead practitioners, both individual and institutional, to use their ingenuity and experience to organize available resources optimally to serve the needs of their communities.

D. Responding to Changes in Society, Medicine, and Technology

Deficiencies in health care in the United States have developed primarily because the ways in which health resources are produced and organized have been largely insulated from the vast changes taking place in society and technology, and in medicine itself. Because continued change is inevitable, the best way to improve the health care system is to build into it the ability to react promptly and appropriately to changes in the environment. Increasing the rate of innovation in the system and improving government policymaking are two major ways for enhancing responsiveness.

1. Increasing Innovation in the Health Care System

As our nation turned to its domestic problems at the conclusion of World War II, it became clear that the enormous advances in the physical sciences (many of which were the direct result of the war effort) had not been matched by those in the biomedical area. To balance this situation, the Federal Government undertook major support of biomedical research both in and out of government. The biomedical research community that was developed, and the rising expectations which its advances have engendered, leave little doubt that support for expanding the frontiers of medicine will be continued.

But while medicine has participated in the scientific revolution, the provision of care has been little affected by the technological changes. Computers are now a major aid to management in almost every industry, but not in the health care sector. Increasing substitution of capital for labor, and advances in communication and transportation have taken place in many service industries, but not in medical care. Yet, it is only by exploiting the innovations and technologies of other sectors and by developing new techniques appropriate to its own problems that the health care system can adequately respond to social change and scientific advance.

Although the introduction of financial incentives is essential for increasing innovation in the health care system, Government support of experimentation and research should play a major role. The Regional Medical Programs, designed to make available to the practicing physician the latest techniques and research findings, represent one federally sponsored effort to improve the provision of health care. Although this program has the potential for bringing about significant improvements, restrictions written into the legislation will limit the range of experimentation and innovation that can be supported. Such restrictions do not apply to the programs of the planned Center for Health Services Research and Development in the Department of Health, Education, and Welfare. But if the Center is to carry out the work for which it is proposed, it must be supplied with adequate funds and have freedom to support imaginative research and experimentation. We therefore recommend that *the Congress attach a high priority to the support of the Center for Health Services Research and Development and that the Secretary of Health, Education, and Welfare locate the Center in his Department in such a way that its effectiveness will not be reduced by the parochial interests of any constituent agency.*

Financial support should be made available for large-scale experiemental projects of integrated health service systems under a variety of auspices including physicians in private practice, universities, hospitals, voluntary agencies, and government. These systems should include, but not be limited to, programs which are comprehensive, serve a cross-section of socio-economic groups on a community or areawide basis, and emphasize organized services for ambulatory patients.

2. Improving Government Policy Decisions

The Federal Government exerts a major influence, through its legislative and executive programs, on the nature of the health care system. In order to formulate timely policy and translate it into operational programs, the President and the Secretary of Health, Education, and Welfare need access to the latest information, and—in order to utilize fully this information—they need enhanced analytic and advisory capabilities.

a. Consistent and Timely Data—Despite the advent of automated computational methods, the basis for sound decision-making continues to be the availability of accurate, consistent, and timely data. If one fact has struck the Commission during its deliberations, it is the lack of such data in the health field. Professional societies, government agencies, hospital associations, insurance organizations—all collect data on different parameters, in different time spans, by different methods, and for seemingly unrelated (and often undefined) purposes. We have been surfeited with numbers whose value is vitiated by disclaimers about accuracy, completeness, or comparability. We are also concerned that there has been so little demand for data by people in health operations that Federal agencies collecting such data are publishing in 1967 material which was gathered in 1959. Even with a program as enormous and important as Medicare, data on the first month of operation are not expected to be available until a year and a half later.

Within the Federal Government, the Bureau of the Budget has overall responsibility for regulating the collection, analysis and dissemination of data by Federal agencies. The Budget Bureau occasionally delegates its authority to a single agency which acts as a focus for data on a particular subject. Within the subject area of its responsibility, the focal agency makes sure that data collection by Government agencies is coordinated and that the results are presented in compatible forms. Because a similar arrangement could greatly improve the quality of health data, we recommend that *the Bureau of the Budget consider delegating to the National Center for Health Statistics the responsibility for supervising the collection, analysis, and dissemination of health data. This Center would act as a focal agency to assure that the collection of health data by Federal agencies is coordinated and that the results are analyzed and disseminated in compatible forms.*

b. Analytic and Advisory Capability—The Secretary of Health, Education, and Welfare has the basic responsibility for originating and coordinating Government efforts to improve health care. However, his office has limited capacity for evaluating present and proposed programs in order to combine them into a coherent attack on health problems. We therefore recommend that *the Secretary of Health, Education, and Welfare have within his own office a greatly expanded analytic capability, and that he be provided with substantial funds to contract for assistance outside the Government.*

Council of Health Advisers. Almost every panel of the Commission has noted that, if the Government is to respond promptly to new demands on the health care system, it will need continuing advice from a source that concerns itself with the entire spectrum of government and nongovernment health activities. To provide the government with continuing policy advice, we recommend that *a Council of Health Advisers should be established.* The Council would be composed of nongovernment experts who would serve on a full-time basis for a limited period, such as three years. It would require a large enough budget to provide adequate staff support, and to permit it to fund studies outside the Government.

The Council would have to maintain intimate working relations with the myriad of professional and business interests which have the actual responsibility for most health care. It would also need complete access to all government departments that are involved with health in any way. Therefore, although such a Council should be placed at the level of the Secretary of Health, Education, and Welfare in order to insure maximum interaction between the Secretary and the Council, it should in no sense be a captive of that Department. Rather, its reports should be made to the President and the public through the Secretary of Health, Education, and Welfare.

We are not in a position to describe the detailed operations of such a Council, nor the arrangements which would best allow it to exchange information with all relevant government agencies and with private organizations. But the principle of such an operation is sound, and we hope that the proposal will be explored and implemented.

Summary of Recommendations

Health Manpower and Health Services in the Future

The Supply of Physicians

The United States should produce a sufficient number of physicians to meet its needs and, further, it should assist other countries, particularly developing nations, to improve their systems of medical education and their levels of medical practice and public health. (page 18)

The production of physicians should be increased beyond presently planned levels by a substantial expansion in the capacity of existing medical schools, and by continued development of new schools. (page 19)

Federal funds in support of capital or operating costs of education should be provided to a medical school in such a way that they create economic incentives for the school to expand enrollment while improving its quality. Such incentives should be based on increases in the absolute numbers of medical students. (page 19)

Supply of Dentists

In order to increase further the production of new dentists, schools and students of dentistry should be provided the same incentives as those recommended in this Report for schools and students of medicine. (page 21)

Supply of Nurses

Nursing should be made a more attractive profession by such measures as appropriate utilization of nursing skills, increased levels of professional responsibilities, improved salaries, more flexible hours for married women, and better retirement provisions. (page 23)

Education of Health Professionals

The Federal Government should carefully explore ways to provide support directly for the educational function of medical schools. (page 25)

The Federal Government should revise and expand present Health Professions Education Assistance Programs to make available to any medical student loans to cover the full costs of tuition and living expenses during formal professional education.* (page 25) The student should be able to choose between repaying the loan from earnings over a period of years or giving two years of his time to approved national service apart from Selective Service obligations.* (page 26)

A national, computerized matching program should be developed to facilitate admission procedures for medical schools. (page 26)

The Federal Government should markedly expand support specifically designated for research in the educational process for physicians and other health personnel. (page 29)

Formal education for all health professionals should be conducted under the supervision of universities. This would include graduate training such as internships, residencies, and their equivalents. (page 31)

Health professional schools should study their positions in the continuum of education and develop and implement curricular revisions aimed at increasing intellectual stimulation and flexibility. Concurrently, health professional schools should initiate a continuing functional analysis of health care against which the substance of current curricula should be continuously revised. (page 31)

The Federal Government should give high priority to the support under university direction of experimental programs which train and utilize new categories of health professionals. (page 32)

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*I believe these recommendations are necessary until such time as free medical education becomes available in this country.—Mary Bunting

I do not regard the idea of shifting the full cost of tuition to the student subject to subsequent repayment in cash or indentured service as a progressive step in public policy; in a covert way it negates the long-established policy of public responsibility for providing educational opportunity for all according to their talents without reference to their ability to pay. Further, I do not believe that this proposal can really be expected to draw into medicine more students from lower income brackets.—Charles E. Odegaard

I wish to dissent from these recommendations. I believe the principle is not sound and that the recommendations are impractical, unnecessary, will not serve the purposes intended, and will be largely unacceptable to most students.—Dwight L. Wilbur

Improving the Health Care System

Gaps in the Distribution and Quality of Health Care

THE DISADVANTAGED

Programs for health care of the disadvantaged should be given highest priority and made available wherever needed. (page 38)

Innovations introduced experimentally for the care of the disadvantaged should be carefully examined for their applicability to the care of all persons. Conversely, programs for the care of the disadvantaged should incorporate elements from existing methods of medical care, wherever appropriate. (page 38)

Experimental programs to develop new methods of health care for the disadvantaged should be enlarged and should become the combined responsibility of physicians in private practice, universities, hospitals, voluntary agencies, and government at all levels. (page 38)

THE QUALITY OF CARE

Licensure of Health Professionals

Professional societies, universities, and state governments should undertake, with Federal support, studies on the development of guidelines for state licensure codes for health personnel. (page 40)

Professional societies and state governments should explore the possibility of periodic relicensing of physicians and other health professionals. Relicensure should be granted either upon certification of acceptable performance in continuing education programs or upon the basis of challenge examinations in the practitioner's specialty. (page 42)

Foreign Medical Graduates

At a minimum, foreign-trained physicians who will have responsibility for patient care should pass tests equivalent to those for graduates of U.S. medical schools. The National Board of Medical Examiners provides an objective testing service which should be utilized just as it is for graduates of U.S. schools. Issuance of an immigrant visa on the basis of Third Preference should be contingent upon satisfactory performance in the examination. (page 43)

Before foreign medical graduates are permitted to enter training programs with responsibility for the care of patients, they should be required to participate in an orientation and educational program during which their competence in the basic and clinical medical sciences, in English, and other appropriate fields would be assessed, and remedial instruction provided where necessary. Such orientation programs should be conducted by a consortium of medical schools, hospitals, and educational institutions on a regional basis. (page 43)

A Commission on Foreign Medical Graduates should be established outside of government. (page 44)

Monitoring New Technologies

The National Bureau of Standards should extend its interest in the field of medical devices and technology. (page 45)

The Secretary of Health, Education, and Welfare, with advice and assistance of appropriate nongovernment groups, should develop methods of assuring the accuracy of test results produced by medical laboratories, both in and out of hospitals. Such methods could be used as a basis for the certification of medical laboratories to participate in Medicare and Medicaid. (page 45)

Peer Review

Professional societies, health insurance organizations, and government should extend the development and effective use of a variety of peer review procedures in maintaining high quality health and medical care. These procedures should incorporate the following principles: (page 48)

> Peer review should be performed at the local level with professional societies acting as sponsors and supervisors. (page 48)
>
> Assurance must be provided that the evaluation groups perform their tasks in an impartial and effective manner. (page 48)
>
> Emphasis should be placed on assuring high quality of performance and on discovering and preventing unsatisfactory performance. (page 48)
>
> The more objective the quality evaluation procedures, the more effective the review bodies can be. To enable greater objectivity, there should be a substantial program of research to develop improved criteria for evaluation, data collection methods, and techniques of analysis. (page 48)

Emergency Care

The Federal Government should utilize the existing and detailed reports of the National Academy of Sciences, the American College of Surgeons, the American Medical Association, the American Hospital Association, and the Department of Health, Education, and Welfare as guidelines to implement a major program of research, development and the application of methods to prevent accidents and to provide emergency medical care. Such experiments should stimulate medical and administrative staffs of hospitals to try innovative methods which would bypass usual procedures and regulations, and would develop innovations in diagnosis and therapy. (page 49)

CIVILIAN/MILITARY MALDISTRIBUTION OF CRITICAL MANPOWER

The Selective Service Act should be amended to provide for the automatic transfer of the records of every draft-eligible health professional, upon his graduation from professional school, from the local board of his original registration to the local board in whose jurisdiction he works and for subsequent transfer with each change in the location of his work. (page 51)

The Selective Service Act should be amended to provide equal draft-liability for U.S. and foreign medical graduates, provided that the foreign medical graduate has an immigrant visa and that he has not previously served in the armed services of an allied nation. (page 51)

The Federal Government should establish a national computer file of draft-eligible health professionals. (page 52)

Service with the U.S. Public Health Service should be phased out as a substitute for the military obligation of health professionals.* (page 53)

The Department of Defense should be instructed to encourage the greater use of the Military Medicare Amendments of 1965 and should study the feasibility of utilizing voluntarily obtained health professionals in military facilities located in the United States. (page 54)

Conserving Resources

IMPROVING HOSPITAL EFFICIENCY

Improving Hospital Payments

The Federal Government and health insurance organizations should take immediate steps to introduce new formulas of payment on a highly selective but broad experimental basis. The payments should provide rewards for efficiency and high-quality care, and they should provide better hospitals with a basis for obtaining funds to expand their scope of operation. No amount of research, model evaluation, or simulation will provide the necessary information to design the optimum arrangements. This information can be gained only through experience. (page 56)

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*This recommendation is emotional. There is no limitation on draft-eligible medical manpower for our fighting men. Inducement for competent doctors to work in the public interest is necessary and desirable. The proposal puts an unnecessary burden

The following principles should be observed in the development of new payment methods:

The reward for increased quality must be sufficient to make it unprofitable for a hospital to reduce quality and community service in order to lower costs. (page 57)

The guiding, theoretical principle should be the payment of equal amounts to all hospitals in a locality for an equal quantity and quality of service. Because of the differential flow of funds among hospitals, those which are the most efficient and of the highest quality would prosper and expand in the long run, while the poorest and least desirable hospitals would become a diminishing portion of the total hospital sector. (page 58)

Improving Hospital Facilities

Steps to increase the availability of capital in the hospital sector should be coupled with the introduction of incentives into the payment system. (page 60)

The amount by which payments to the hospitals should exceed average cost is a matter which will require extensive study. The margin should be sufficiently large so that for the better hospitals, net income, commercial borrowing made possible by the anticipated future net income, and depreciation funds will be adequate to meet most of the needs for expansion and upgrading of hospital services. (page 61)

Federal assistance in the form of grants and loans (or loan guarantees) should be provided to obsolete hospitals in those areas where modernization needs are so extensive that nongovernment sources of capital funds will be clearly insufficient. (page 61)

Before any decision is made to finance modernization on a large scale, state and Federal governments should carry out a careful study to determine criteria for deciding between modernization and replacement. (page 61)

The Federal Government should provide major support for research and development of improved hospital facilities. (page 62)

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on the public, our seamen, and others. The recommendation does not suggest any advantage for either military or civilian groups, and it most certainly does not assist in easing any manpower shortage.—J. A. Beirne.

Improving Hospital Organization and Management

Health insurance organizations, private foundations, and hospitals, with assistance from the Federal Government, where needed, should underwrite educational programs for members of hospital boards of control. These programs should make the board members familiar with hospital operations in general and intimately knowledgeable about the comparative performance of their own institutions. Concomitantly, these programs should offer advice and assistance for cost reduction and quality improvement. (page 63)

Medical and hospital associations should jointly explore means to increase the physician's responsibility for the successful and economical management of hospital operations. These explorations should include consideration of providing physicians with a financial stake in the operation of the hospitals, and of including physicians in the membership of hospital boards of control. (page 64)

CONTROLLING UTILIZATION

Health insurance organizations should develop workable plans to provide coverage of outpatient as well as inpatient health services. (page 68)

Medicare and Medicaid payments to organizations providing prepaid comprehensive care should be changed from a cost reimbursement basis to one which will permit these organizations to share in the savings they achieve be effective control of utilization. (page 68)

The Federal Government should underwrite a variety of experiments aimed at reducing utilization. As successful methods of controlling utilization are developed, Medicare and Medicaid should share the savings on the same basis used for prepaid comprehensive care plans.* (page 69)

All health insurance organizations should be encouraged to revise their payment methods to share savings with health care purveyors that demonstrate better control over utilization. (page 69)

Peer review should be widely applied to hospital utilization. (page 69)

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*The overwhelming evidence produced by the panel study of the Kaiser operation as well as the discussion of the members of the Health Manpower Commission suggest the properness of recommending favorably the extension of comprehensive prepaid group health care plans.

In addition, the discussions and study of the Health Insurance Plan of Greater New York as well as the three years of experience of the Federal Health Benefit Program show quite clearly the compelling evidence supporting the view that group practice plans bring about the most economical delivery of medical services. The Commission should take forthright stand in support of group practice plans.—J. A. Beirne.

The Federal Government should continue support of planning agencies at regional, state, and local levels to collect, analyze, and distribute information regarding the need for medical care facilities. (page 70)

Mechanisms should be established to provide peer review—on a routine basis—of the appropriateness and proficiency of physicians' practice. (page 71)

The Federal Government should consider establishing on an experimental basis a central patient data bank for Federally operated hospitals whose patient load characteristics approximate those of the general population. (page 72)

Improving the Organizational Framework

Highest priority should be given by community health councils to developing methods which will assure access to adequate health care for all those in the community they serve. (page 72)

Responding to Changes in Society, Medicine, and Technology

Increasing Innovation in the Health Care System

The Congress should attach a high priority to the support of the Center for Health Services Research and Development and the Secretary of Health, Education, and Welfare should locate the Center in his Department in such a way that its effectiveness will not be reduced by the parochial interests of any constituent agency. (page 75)

Financial support should be made available for large-scale experimental projects of integrated health service systems under a variety of auspices including physicians in private practice, universities, hospitals, voluntary agencies, and government. These systems should include, but not be limited to, programs which are comprehensive, serve a cross-section of socioeconomic groups on a community or areawide basis, and emphasize organized services for ambulatory patients. (page 75)

Improving Government Policy Decisions

The Bureau of the Budget should consider delegating to the National Center for Health Statistics the responsibility for supervising the collection, analysis, and dissemination of health data. This Center would act as a focal agency to assure that the collection of health data by Federal agencies is coordinated and that the results are analyzed and disseminated in compatible forms. (page 76)

The Secretary of Health, Education, and Welfare should have within his own office a greatly expanded analytic capability, and should be provided with substantial funds to contract for assistance outside the Government. (page 76)

A Council of Health Advisers should be established. (page 76)

Appendix I

(Appendices II through X in vol. II)

TABLE 1.—*Trends in the supply of health manpower*

[Thousands of persons]

	1950	1955	1960	1965	Percent increase, 1955–65
Physicians (M.D. and D.O.)[1]	233	255	275	305	20
Active physicians (M.D.)	209	228	247	278	22
Private practice (M.D. and D.O.)	168.1	169.9	179.2	190.7	12
Training (M.D.)	21.4	31.0	37.6	43.5	40
Other non-Federal (M.D.)	16.8	25.2	27.3	34.4	37
Other Federal (M.D.)	12.6	13.0	14.2	18.9	45
Nursing and related personnel	734	886	1,085	1,366	54
Professional nurses in practice	375	*416	504	*600	44
Practical nurses in practice	138	*172	206	*266	55
Aides, orderlies, and attendants employed	221	*298	375	500	68
Radiologic technologists[2]	31	*45	60	70	56
Clinical laboratory personnel[3]	30	50	68	85	70
Dentists and allied personnel[4]	170	197	221	241	22
Total dentists	87.2	94.9	101.9	109.3	15
Active non-Federal dentists	75.3	76.1	82.6	86.3	13
Dental hygenists (active)	7.0	*9.8	12.5	15.1	54
Dental assistants (employed)	55.2	*68.9	82.5	91.0	32
Dental laboratory technicians (employed)	21.0	*23.0	25.0	25.5	11
Pharmacists (active)	101	*109	117	118	8

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[1] Figures for categories of physicians not in private practice are given for M.D.'s only, because detailed breakdowns were not available for D.O.'s before 1960. Training includes Federal as well as non-Federal interns and residents.

[2] All figures are rough estimates.

[3] Excludes physicians. All figures are rough estimates.

[4] Total includes all dentists whether active or inactive.

NOTE.—Asterisk (*) indicates the number is based on a straight-line interpolation between the closest available data points.

Source: *Health Resources Statistics*, 1965, U.S. Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics, PHS Publication No. 1509.

TABLE 2.—*Trends in the production of health services* [1]

	1950	1955	1960	1965	Percent increase, 1955–65
I. Physician-directed services:					
(1) Total value (billions of dollars)	2.76	3.68	5.68	9.00	145
(2) Physicians' fees price index (BLS: 1950=1.00)	1.00	1.18	1.39	1.59	35
(3) Deflated value [1950 base: (1)÷(2)]	2.76	3.12	4.09	5.66	81
(4) Value per active M.D. (thousands of dollars)	13.2	16.1	23.0	32.4	101
(5) Deflated value per active M.D. [1950 base: (4)÷(2)]	13.2	13.7	16.6	20.4	49
(6) Deflated value per capita [dollars; 1950 base: (3)÷population]	18.1	18.8	22.6	29.0	54
II. Hospital services:					
(1) Total value (billions of dollars)	3.85	5.93	9.04	13.38	126
(2) Hospital price index (1950=1.00)[2]	1.00	1.25	1.43	1.71	37
(3) Deflated value [1950 base: (1)÷(2)]	3.85	4.74	6.32	7.82	65
(4) Value per active M.D. (thousands of dollars)	18.4	26.0	36.6	48.1	85
(5) Deflated value per active M.D. [1950 base: (4)÷(2)]	18.4	20.8	25.6	28.1	35
(6) Deflated value per capita [dollars; 1950 base: (3)÷ population]	25.3	28.6	35.0	40.1	40
III. Dentist-directed services:					
(1) Total value (billions of dollars)	.98	1.53	1.98	2.83	85
(2) Dentists' fees price index (BLS: 1950=1.00)	1.00	1.14	1.28	1.44	26
(3) Deflated value [1950 base: (1)÷(2)]	.98	1.34	1.55	1.97	47
(4) Value per active dentist (thousands of dollars)	13.0	20.1	24.0	32.8	63
(5) Deflated value per active dentist [1950 base: (4)÷(2)]	13.0	17.6	18.8	22.8	30

See footnotes at end of table.

TABLE 2.—*Trends in the production of health services* [1]—Continued

	1950	1955	1960	1965	Percent increase, 1955–65
III. Dentist-directed services—Continued					
(6) Deflated value per capita [dollars; 1950 base: (3)÷population]	6.4	8.1	8.6	10.1	25

[1] Basic source: Ruth Hanft, "National Health Expenditures, 1950–65," *Social Security Bulletin*, February 1967. Figures for the various categories of health service are national figures; thus they include Federal and local government-supplied services, as well as privately supplied services. Note, however, that the figures for physician services refer only to the value of services supplied by physicians in private practice. They include services rendered by such physicians in government facilities, but they exclude the services provided by physicians employed full-time by government, hospitals, or educational institutions.

[2] The hospital cost index was constructed from data presented in the *Hospital Guide Issue* and a BLS commodity price index. In essence, it is a weighted average of the wage rates of hospital employees and an index to reflect the price changes in non personnel hospital costs. The figures used in preparing the index are presented in table 3.

TABLE 3.—*Hospital cost index*

	1950	1955	1960	1965
(1) Payroll÷total expense	0.600	0.648	0.664	0.660
(2) Non-payroll÷total expense	.400	.352	.336	.340
(3) Payroll÷number of personnel (1950 set equal to 1.00)	1.00	1.34	1.69	2.12
(4) Non-Farm Wholesale Price Index (BLS; 1950 set equal to 1.00)	1.00	1.11	1.22	1.24
(5) Hospital price index: 1÷[(1)/(3)+(2)/(4)]	1.00	1.25	1.43	1.71

Sources: *Hospitals, Guide Issue*, Aug. 1, 1966; Table 1, p. 439, data for all U.S. Hospitals. BLS index from *1967 Economic Report of the President*, p. 264.

TABLE 4.—*Short-term general hospital services, 1955–65* [1]

	1955	1965	Percent increase, 1955–65
(1) Total value of services (billions of dollars)	3.432	9.147	167
(2) Hospital price index (1955=1.00) [2]	1.00	1.44	44
(3) Average daily census (thousands)	409	563	38
(4) Deflated value of services per patient-day (dollars, 1955 base: [row (1)/365]÷[row (2) · row (3)])	22.99	30.91	34

[1] Basic source: *Hospitals*, "Guide Issue," Aug. 1, 1966; Table 1, "Non-Federal Short-Term General and Other Special," p. 439. Data for 1955 interpolated from figures on 1954 and 1956.

[2] The hospital cost index was constructed from data presented in the *Hospitals*, "Guide Issue;" Aug. 1, 1966. In essence it is a weighted average of the wage rates of hospital employees and an index to reflect price changes in non-personnel hospital costs. Construction of the index is shown in Table 6.

TABLE 5.—*Price index for short-term general hospitals*

	1955	1965
(1) Payroll÷total expense	0.612	0.62
(2) Non-payroll÷total expense	.388	.38
(3) Payroll÷number of personnel (1955 set equal to 1.00)	1.00	1.60
(4) Non-Farm Wholesale Price Index (BLS; 1955 set equal to 1.00)	1.11	1.24
(5) Hospital price index: 1÷[(1)/(3)+ (2)/(4)]	1.00	1.44

Sources: *Hospitals, Guide Issue*, Aug. 1, 1966; Table 1, p. 439, data for short-term general and other special hospitals. Bureau of Labor Statistics (BLS) index from *1967 Economic Report of the President.*

Table 6.—*Countries exceeding the United States in average remaining lifetime at birth, 10 years or 20 years, arranged in order of rank at birth for males* [1]

Rank	Country	Date of data	Males			Females			Difference, females minus males—At birth
			At birth	At 10 years	At 20 years	At birth	At 10 years	At 20 years	
1	Netherlands	1956–60	71.4	63.4	53.7	74.8	66.5	56.7	3.4
2	Sweden	1962	71.32	63.05	53.40	75.39	66.76	56.96	4.07
3	Norway	1951–55	71.11	63.65	54.11	74.70	66.72	56.96	3.59
4	Israel [2]	1962	70.78	63.52	53.93	(72.80)	(65.21)	(55.35)	2.02
5	Iceland	1951–60	70.7	62.8	53.3	75.0	66.8	57.0	4.3
6	Denmark	1956–60	70.38	62.77	53.12	73.76	(65.60)	(55.79)	3.38
7	Switzerland	1959–61	69.5	[3] 61.9	52.3	74.8	[3] 66.7	56.8	5.3
8	Canada	1960–62	68.35	61.02	51.51	74.17	66.41	56.65	5.82
9	New Zealand [4]	1955–57	68.20	60.77	51.29	(73.00)	(65.09)	(55.40)	4.8
10	United Kingdom (England and Wales)	1960–62	68.0	60.2	50.6	74.0	65.7	55.9	6.0
11	Northern Ireland	1960–62	67.64	60.21	50.53	(72.40)	(64.59)	(54.76)	4.76
12	Greece	1960–62	67.46	62.53	52.90	(70.70)	(65.48)	(55.76)	3.24
13	Spain	1960	67.32	60.96	51.41	(71.90)	(65.03)	(55.31)	4.58
14	East Germany	1960–61	67.31	60.62	51.09	(72.18)	(64.89)	(55.11)	4.87
15	Japan	1963	67.21	59.70	50.10	(72.34)	(64.45)	(54.70)	5.13
16	Czechoslovakia	1962	67.21	59.49	49.92	(72.83)	(64.72)	(54.93)	5.62
17	France	1963	67.2	59.3	49.7	74.1	65.9	56.1	6.9
18	Puerto Rico	1959–61	67.14	61.66	52.20	(71.88)	66.02	56.37	4.74
19	Australia	1953–55	67.14	59.53	50.10	(72.75)	(64.78)	(55.06)	5.61

See footnotes at end of table.

TABLE 6.—*Countries exceeding the United States in average remaining lifetime at birth, 10 years or 20 years, arranged in order of rank at birth for males* [1]—Continued

Rank	Country	Date of data	Males			Females			Difference, females minus males—At birth
			At birth	At 10 years	At 20 years	At birth	At 10 years	At 20 years	
20	Malta and Gozo	1960–62	67. 01	59. 95	50. 26	(70. 70)	(63. 37)	(53. 56)	3. 69
21	United States	1964	66. 9	59. 2	49. 7	73. 7	65. 7	55. 9	6. 8
22	West Germany	1959–60	(66. 69)	59. 92	50. 38	(71. 94)	(64. 65)	(54. 89)	5. 25
23	Italy	1954–57	(65. 75)	60. 53	51. 04	(70. 02)	(64. 37)	(54. 68)	4. 27
24	Hungary	1959–60	(65. 18)	59. 67	50. 16	(69. 57)	(63. 52)	(53. 79)	4. 39
25	Poland	1960–61	(64. 8)	59. 7	50. 1	(70. 5)	(64. 7)	(55. 0)	5. 7
26	Bulgaria	1956–57	(64. 17)	61. 29	51. 85	(67. 65)	(64. 09)	(54. 47)	3. 48
27	Albania	1960–61	(63. 69)	62. 27	52. 82	(66. 00)	66. 19	56. 66	2. 31
28	Cyprus	1948–50	(63. 6)	60. 3	50. 9	(68. 8)	(65. 4)	(55. 8)	5. 2
29	Yugoslavia	1960–61	(62. 18)	59. 83	50. 31	(65. 27)	(62. 82)	(53. 21)	3. 09
30	Portugal	1959–62	(60. 73)	59. 33	49. 88	(66. 35)	(64. 48)	(54. 85)	5. 62
31	Ceylon	1954	(60. 3)	60. 2	51. 0	(59. 4)	(59. 3)	(50. 3)	—0. 9

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[1] Figures in parentheses below are corresponding figures for United States.

[2] Jewish population only.

[3] Values interpolated.

[4] Maoris excluded.

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